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SOME RECENT DEVELOPMENTS IN THE FIELD OF ENDOCRINOLOGY OF INTEREST TO THE GENERAL PRACTITIONER.*

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There is no field in medicine just now that is the subject of so much active work and interest among physiologists, pharmacologists, anatomists, and experimentalists in general as that of the glands of internal secretion. We physicians are being constantly bombarded from all sides with literature on the subject, most of it coming from those who have something to sell. We are apt to fall into one of three groups; those who are over-enthusiastic in the use of glandular preparations, those who are without interest in the subject, and those occupying a middle ground who are interested but who are in a state of confusion as to what is good and what is bad. This last situation is more or less inevitable in the development of any very active and rapidly changing scientific field. It behooves us to take stock once in a while and to see how much the situation can be clarified.

I wish first to present briefly certain clinical pictures that have recently been identified as definitely associated with the endocrine glands and then to take up some of the more recent work in the isolation and use of active principles of some of the glands.

Clinical Syndromes

The clinical pictures that I have in mind are examples of over-activity of ductless glands and are frequently found associated with tumors of the gland in question. This is itself an interesting fact from the academic standpoint. Twenty years ago, we were accustomed to teach that tumors consisted of cells that were specializing in the function of growth at the expense of all other functions. The malignant tumors especially were thought to show this extraordinary power of growth with practically a total lack of the other functions of the cells from which the tumor originated. We now know that this is altogether incorrect and this newer knowledge has been gained chiefly from a study of these cases of endocrinopathies. We now know that even metastases from malignant tumors of endocrine glands can produce large amounts of material identical with, or closely similar to, that produced by the cells from which the tumor originally sprang.

The more recently recognized clinical syndromes of this type are associated with tumor growth or marked hypertrophy of the *parathyroid glands*, of the *Islands of Langerhans* in the pancreas, and with the *chromaffin tissue* or medullary tissue of the suprarenal glands.

Hyperparathyroidism.—Associated with this change in the parathyroid glands is a marked disturbance of calcium metabolism with high calcium and low phosphorus values in the blood serum, with rarefaction, fibrous growth, and cyst formation of the bones (the osteitis fibrosa cystica of von Recklinghausen) and the presence of metastatic areas of calcification in other tissues, as, for example, cartilages, arteries and tendons. Any widespread disease of the bones now calls for a study of the calcium metabolism with the parathyroid glands in mind. Removal of parathyroid tumors results in cure of the disease pictures associated with them.

Hyperinsulinism.—Tumors or marked hypertrophy of the Islands of Langerhans are associated with an over-production of insulin and attacks of spontaneous insulin shock when the patient has gone too long a time without food. Those of you who have seen examples of insulin shock in the treatment of diabetics would readily recognize the spontaneous type if the possibility of such an occurrence were kept in mind, for the attacks are in all respects similar. There is the state of mental confusion, of amnesia, of anxiety, with muscular tremors and sweating, paraesthesias, sometimes a negativistic state, sometimes screaming and shouting,

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rarely convulsions, and rarely a totally unconscious state. Such episodes are at once cleared up by the intravenous administration of glucose or quickly relieved by eating an available carbohydrate. As long as the patient's food requirements are not excessive he can be made comfortable by the proper spacing of times of eating, but when this becomes difficult and the person's life is made miserable by the attacks or by the fear of them, an exploratory laparotomy is justifiable and, in a number of instances, the condition has been entirely cured by the removal of a small pancreatic tumor.

Hyperepinephrinism.—Tumors of the medulla of the suprarenal glands, or of the chromaffin tissue situated elsewhere in the retroperitoneal region, may be associated with attacks that suggest strongly the sudden outpouring of large quantities of epinephrin (adrenalin) into the blood stream. Here, as in the case of the pancreatic condition just described, the patient may be entirely normal between attacks. The attacks in the case of the chromaffin disturbance come on at first under conditions associated with some stress or excitement and rarely when the patient is quiet and comfortable in bed. One patient could bring on an attack at will by certain postures of the body. There is, during an attack, a rise in the pulse rate, a marked rise in blood pressure, tremors, flushing of the skin, sweating, marked feelings of nervousness, and palpitation. The most striking clinical feature is the paroxysmal arterial hypertension, the pressure rising to perhaps 250 over 110 or 115. The attacks may last for several hours.

The history in such cases and the attacks themselves are so characteristic that the diagnosis has been made even in the absence of a demonstrable retroperitoneal tumor, exploratory operation performed, and a tumor removed with complete cure of the condition. One or two patients that have refused operation seemed to be benefited by X-ray treatment. One such patient, after a period of improvement, later showed chronic and continuous arterial hypertension.

Although all three of these clinical pictures are rare in their occurrence, they are important because they are usually associated with a benign neoplasm of the gland involved, they can be exactly diagnosed in typical cases, and under favorable circumstances can be entirely cured by surgical operation.

Analogous conditions in other endocrine glands of tumors or hypertrophy associated with signs and symptoms of increased hormone production are, of course, well known. There are thyroid adenomata associated with hyperthyroidism; adenomata of the acidophilic cells of the anterior hypophysis resulting in acromegaly; adenomata of the basophilic cells of the hypophysis with peculiar sex disturbances; and tumors of the suprarenal cortex, again with queer sex disturbances. Certain rare tumors of the ovaries and of the testes have been described with disturbances of the incretions of these glands.

Potent Glandular Extracts

The discovery of insulin gave a great impetus to the study of extracts of the endocrine glands and to the chemical researches on their composition. This work has been very active in the past few years and the results very encouraging, so that now we may say that potent extracts of most of the important glandular structures have been made and their effects studied on the experimental animal. Thyroxin, the active portion of the thyroid protein (iodo-thyreo-globulin), insulin from the pancreas, and estrin from the Graafian follicles of the ovary, have been isolated and purified in crystalline form.

Potent extracts of other glands are so far known only by their physiological effects. Parathormone, obtained from the parathyroid glands, is of value in preventing the symptoms incident to the removal or lack of function of the parathyroid glands and, when injected in very large doses into animals, will produce a condition of bones similar to the osteitis fibrosa cystica. Insulin has, of course, been of the greatest value in diabetes and is very helpful also in overcoming malnutrition. Adrenalin, from the suprarenal medulla, and pituitrin from the posterior lobe of the hypophysis, have long been useful as drugs rather than as substitution products for glandular deficiency. Recently there has been obtained a potent extract of the cortex of the suprarenal gland that will keep alive and in good condition animals that have been completely suprarenalectomized. The early work in the treatment of Addison's disease with this extract leads one to hope that it will be of great value in the treatment of that disease. A preparation called eschatin has recently been placed on the market.

In the opinion of most conservative experimentalists and physicians, the thyroid products are still the only ones that have a practical potency when administered by mouth, although Collip claims that one of the hormones that he has isolated from the placenta is potent when given by mouth, and some of the German laboratory workers believe that the female sex hormones also have some efficacy when given in very large doses by mouth.

A great advance has been made, of course, when a useful extract has been obtained in the research laboratory and its potency demonstrated on the experimental animal. After this stage, however, there are still great difficulties before such an extract can be made commercially available. There are difficulties of manufacture on a large scale, difficulties of standardization and of stability of the product.

Hypophyseal and Sex Hormones.—One of the very most active and interesting fields of endocrine research during the past few years has been in that of the hypophyseal and sex hormones that have such an intimate relationship to each other. This work had its origin in the work of Evans and Long in California on the growth hormone and other hormones of the anterior lobe of the hypophysis and in the work of Allen and Doisy in the study of the follicular hormone of the ovary.

By means of implants of the anterior lobe of the hypophysis and of alkalin extracts of the anterior lobe, Evans was able to produce gigantism in rats, the giant reaching twice the size of the normal animal. In the course of this work he noted a marked effect also on the gonads of the animals and on the accessory genital structures including the tubes, the uterus, the vagina, and the mammary glands. These effects on the accessory organs of reproduction did not occur in the absence of the ovaries. Allen and Doisy had, in the meantime, demonstrated the effectiveness of the follicular extract in promoting the growth of the accessory organs of reproduction and in the production of oestrus in spayed female animals. Since then a tremendous number of contributions have been poured into the literature from all parts of the world.

It is now generally recognized that both the hypophysis (anterior lobe) and the ovary are necessary in the physiology of reproduction and that one is not effective in the absence of the other. There are at least two definite ovarian hormones; the one, variously named, estrin, folliculin, the female sex hormone, the oestrus-producing hormone, ovarian follicular hormone, theelin, menformen; and, second, progestin, the name given by Corner to a specific product of the corpus luteum and which is called lutin by Zondek and other German investigators. In brief, the follicular hormone stimulates the growth of the accessory organs of reproduction, and the progestin prepares the endometrium for the reception of the fertilized ovum and is necessary to the success of the early part of pregnancy.

It is uncertain whether there is only one anterior hypophyseal sex hormone or whether there are two or more, but at present it is rather generally accepted that there are two such sex stimulating hormones, called by the Germans prolan A and prolan B, and by the Americans by the more descriptive terms of the follicle-stimulating pituitary hormone and the luteinizing pituitary hormone. The first one stimulates the growth of the Graafian follicles and the mobilization of their hormone, folliculin or estrin, and the second stimulates the growth of lutein cells in the follicles, the formation of corpora lutea and the mobilization of progestin.

In view of the fact that most of these studies have been carried on with rats and with mice and of the difficulty or impossibility of interpreting human menstruation in terms of the oestrus of these rodents, it is not yet known just how these hormones serve in the physiology of the human reproductive cycle. It is evident, however, that each has its proper place in the picture and that when pregnancy occurs there is a tremendous outpouring of all of these hormones and they are found in the placenta, in the amniotic fluid, in the circulating blood, and in large amounts in the urine of pregnant women. The discovery of these facts has led to two important results for the clinician; first, it has given a very valuable and quite reliable test for pregnancy, and it has furnished a convenient source for the extraction of these hormones for clinical purposes.

Pregnancy Tests. — The Aschheim-Zondek test for pregnancy has met with world-wide approbation. Whether or not this material in the urine of pregnant women is really a hormone from the anterior lobe of the hypophysis, it is safe to say that the urine of pregnant human females, after about the third week, contains large quantities of substances resembling in their effects the gonad-stimulat-

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ing hormones of the anterior lobe of the hypophysis. The Aschheim-Zondek test and Friedman's modification of it, or the rabbit ovulation test, are two different methods for obtaining evidence as to the presence or absence of the hormones in question in a given sample of urine. The former is performed by giving daily injections of the urine to immature mice; mice that would normally mature at the age of sixty days are chosen for the test when thirty days old. Four or five mice are used for each test and each one is injected daily with some of the urine for three or four days and at autopsy after five days the ovaries are examined directly for signs of stimulated growth and function. These are shown by the presence of ripened follicles, hemorrhagic follicles, and corpora lutea. The rabbit test of Friedman depends upon the fact that rabbits which (unlike most other mammals) do not normally mature and rupture their Graafian follicles except after copulation, may be made to ovulate without copulation by giving them an intravenous injection of the gonad-stimulating hormone as found in the hypophysis and in the urine of pregnant women. As detailed by Wilson and Corner the rabbit test is performed with ordinary voided specimens of urine that may be kept for some time stored in the ice box. Positive specimens remain active for many months so that they may be sent by mail from distant points. The test is begun by giving to a suitable rabbit, an adult female that has been kept in isolation for some time, an intravenous injection without sterile precautions of 5 c.c. of the urine. The injection is given into the ear vein of the rabbit, a very simple procedure, and is usually done at about 5:00 P. M. The next morning, at 9:00 A. M. or later, a laparotomy is done on the rabbit under ether anesthesia and with the usual surgical technique and the ovaries are examined for the recently erupted Graafian follicles that are obvious to experienced observers. After the observation the abdominal wound is closed with silk and the animal returned to isolation and subsequent use.

The test shows a very high degree of accuracy. Large series of cases have shown only 1 per cent to 3 per cent of errors. The test is positive as early as eight days after the first missed period. It remains positive throughout pregnancy and for twenty-four to seventy-two hours after pregnancy has terminated. It is positive in all cases where there is living fetal tissue in biological contact with the maternal blood. It is, therefore, a valuable and a practical method for the diagnosis of early pregnancy. It is useful in deciding between complete and incomplete abortion. It may be of considerable value as an aid in the diagnosis of extra-uterine pregnancy. It is useful in cases of missed abortion where the fetus has died but not been expelled.

The test is strongly positive in certain cases of abnormal pregnancies, notably in the presence of hydatidiform moles and in chorio-epitheliomas. In one case of hydatidiform mole the reaction was positive with 1/520 of a c.c. of urine. The test will remain positive as long as any portion of these tumors remains.

Hormonal Therapy.—The study of these hormones and the development of extracts containing them has naturally led to the attempt to see what may be accomplished in the treatment of menstrual disorders and other gynecological conditions. There are still difficulties in the standardization of the material, in questions of dosage and at times in the choice of the extract for use in a given case.

In regard to the female sex hormone, the follicular hormone, estrin, it would seem *a priori* that its chief use would be found in the treatment of menopausal symptoms, both artificial and natural, and such has thus far been the impression among those clinicians who have made the actual trials. Dodds, of England, has reported two patients whose ovaries had been removed and the uterus had been left untouched. After the intramuscular injections of estrin, menstruation appeared in three weeks and was followed by another period a month later. The injections were carried on for five months and the periods continued normally. Cessation of treatment, however, was followed by abrupt cessation of the menses. Such an objective result is, of course, of far more importance in evaluating the treatment than merely the subjective improvement of symptoms. It is said that the vasomotor and other symptoms can be satisfactorily controlled as well as the general symptoms of nervous irritability.

There are favorable reports also of the use of estrin in the treatment of hemophilia, the hereditary bleeder's disease.

Where there is potentially functional ovarian tissue in the body, as in the case of secondary amenorrhea, or hypomenorrhea, or delayed development with infantilism, the ma-

terial of choice would seem to be the ovary-stimulating substance so readily obtained from the urine of pregnant women. There is such a product now being marketed—called Antuitrin-S.

It is interesting that the first definitely successful therapeutic results with this substance have been obtained in another type of menstrual disorder, namely, the so-called functional uterine bleeding, particularly of young women, that is associated with hyperplasia of the endometrium. Successful series of cases have been reported by Novak, by Zondek and others. The most successful methods of treatment hitherto employed in these cases had been repeated curettage of the uterus and, in the more severe cases, the use of radium or X-rays. The latter method is particularly to be deplored in young women in whom menstruation and the reproductive function should not be impaired. It had been noted that, in abdominal operations on such cases, the ovaries might show many and large Graafian follicles but no appearance of corpora lutea. These and other data led to the belief that the condition was associated with an over-production of the follicular hormone and a lack of progestin, the hormone developed from the corpus luteum. In the absence of a satisfactory preparation of progestin for use in clinical cases, the trial was made with the luteinizing hormone from the urine of pregnant women on the hypothesis that luteinization would be established in the ovaries and consequently production and mobilization of the hormone, progestin. The results in many cases were astonishingly successful, but in some of these patients the cessation of bleeding occurred so promptly that time was hardly afforded for the formation of corpora lutea. In fact, in quite a number of the patients the bleeding stopped after the first injection.

Zondek was impressed by his observation that in abdominal operations upon women who had been receiving his Prolan, that is, the sex stimulating hormone obtained from the urine of pregnant women, the pelvic viscera showed very marked hyperaemia and increased local temperature. This led him to the use of Prolan in the treatment of chronic pelvic inflammatory conditions with, as he thought, favorable results. Similar favorable results were reported by another observer, repeating this work, but denied by still another one.

Since then Zondek has described his treatment of acute pelvic inflammation, particularly pelvic abscesses, that he regularly treats now by first puncturing and emptying the abscess and then beginning the injections of Prolan two or three days later, one ampoule of 100 rat units a day intramuscularly for ten or twelve days. He believes that the pelvic pains cease very soon under this treatment and that the hospital stay and the course of the illness is much shortened. Sometimes, he says, there is some bleeding from the uterus which usually stops of itself after a few days.

Naturally, with such potent materials available, the perennial question of rejuvenation presents itself. It seems, however, that we are not quite that near to the endocrine millennium. No claim has yet been made, as far as I am aware, that any extract will re-induce sexual activity in the senile. It is quite interesting, nevertheless, in this connection, that with implantation of anterior hypophyseal substance, something of this sort seems actually to have occurred. Evans, who is a very careful worker, states that implantation of anterior hypophyseal substance in the senile male rat causes a definite increase in sex activity and increase in weight of the accessory organs of reproduction. Hoffman further reports that anterior hypophyseal implant seems to be capable, not only of initiating ovarian function in immature mice, but also of re-establishing ovarian activity in old, menopausal mice. These hypophyseal implants, he says, apparently possess distinct stimulating properties by reason of the hormones which they contain. They do not continue to grow and produce additional hormones but their effect upon the activities of the ovaries seems to be continued even after their own activity has ceased. It is suggested by these experiments that old, non-oestrous mice, when once stimulated, can be kept sexually active for a considerable time without further stimulation. The anterior hypophyseal implant may act by mobilizing the latent residual hormones of the senile ovary. In one of the experimental animals, ovulation was restored and was succeeded by the gravid state. Hoffman makes the further statement that up to the present time no extract or other preparation of the anterior lobe of the hypophysis has been found which when injected or taken by mouth has the physiological effect of the gland implant.

There are favorable reports by Ehrhardt and Wiesbader on experiments with hypophyseal

implants in human beings. They obtained fresh anterior hypophyseal glands under sterile precautions and implanted them in the subcutaneous fat of the adductors of the thigh. In some cases of amenorrhea occurring in women upon whom various ovarian preparations had been used without effect, the menstrual periods were re-established.

In regard to determination of satisfactory dosage in the clinical use of extracts of the sex-stimulating hormone, not much has yet been accomplished. It has been noted, however, that when transfusions of blood have been made from a pregnant woman to a non-pregnant one, there is a passive transference of these sex-stimulating hormones to the blood of the recipient and that practically all of these hormones are excreted in the urine of the recipient within twenty-four hours after the transfusion. It begins to appear in the urine within ten or fifteen minutes after the transfusion. This would suggest that in the clinical use of the extract more satisfactory results may be expected from the use of small doses frequently repeated than from large doses at longer intervals.

It seems quite possible that before long materials comparable in their potency to those in use in research laboratories may be made available to the profession.

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BACTERIOLOGY AND TREATMENT OF RHEUMATOID ARTHRITIS.

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The treatment of rheumatic disabilities, in a tragically familiar metaphor, has been a game of medical football in which every known type of practitioner, charlatan and fakir has felt perfectly free to play. The great frequency of these conditions justifies the interest which the regular medical profession is just beginning to evince in them. In England, where there has been considerable study of rheumatism in its relation to industry, rheumatic diseases rank third in the list of causes for which industrial workers consult physicians. In 1927, at the Mayo Clinic, one out of every fourteen patients had one of the rheumatic diseases as a primary or secondary diagnosis.

From time immemorial the classification of arthritis has been confused. The classification of Nicholls and Richardson, based on pathological changes, has recently come into clinical use and has received favorable comment from Cecil and Archer, Pemberton, and others. This classification divides arthritis into two general groups, proliferative and degenerative.

Proliferative arthritis more often occurs in the young, though it may develop at any age. There are marked inflammatory changes in the synovial membrane and in the perichondrium, with swelling and later on, deformity and ankylosis of the affected joints. This group may be further subdivided according to the etiologic agent involved.

In degenerative arthritis, the cartilage and bone are soft and eroded in the primary stage of the disease, but undergo hypertrophy in the later stages. Degenerative arthritis may be subdivided into: (1) Cases occurring with and following menopause; (2) those of "metabolic"

origin, as in gout; (3) mono-articular arthritis following trauma; (4) senile arthritis; (5) arthropathies secondary to lesions of the central nervous system (syringomyelia), secondary to Charcot's disease, or secondary to certain lung conditions (pulmonary osteoarthropathy).

This paper will be limited to a discussion of that type of joint disease known as proliferative, "chronic infectious" or rheumatoid arthritis.

On physical examination, the patient presents a fairly typical picture. He is usually anemic with hemoglobin of 70 per cent or under. If the condition is of long standing, the patient often appears chronically ill and undernourished. On the other hand, if it is an early case, he may be well-nourished. The hands are usually cold and clammy and covered with perspiration. The characteristic, swollen finger joints have on palpation a peculiar doughy or rubber-like consistency, and in some instances the skin overlying the joint may become slightly bluish. The enlargement of the joint is due to the swelling and thickening of the synovial membrane and capsular ligaments. There is little, if any, pain on pressure, and only moderate pain on movement of the joint. In the larger joints, the signs of inflammation are more marked. There is more tenderness on pressure and more pain with movement, and there may be an effusion of fluid. Of all the large joints, the knees are the most frequently affected. In a well-established infection, the ankles, wrists, elbows, and shoulders are usually implicated. The hip joints usually escape until later in the disease. The intervertebral joints are frequently involved, particularly in the cervical and lumbar regions. The temporomaxillary joints are frequently affected.

General treatment should be based upon methods which not only help to make the patient comfortable and to prevent deformities but also build up his resistance against active infection. Non-specific protein therapy, milk injections, typhoid vaccine, etc., may at times stimulate antibodies and thereby increase tissue resistance and give temporary relief. Analgesics, not narcotics, should be given liberally for psycho-therapeutic effect and relief of pain. Thyroid extract may stimulate metabolism and give a sense of well-being in cases of subnormal metabolism. Patients with gastric subacidity, a frequent symptom in arthritis, may be benefited by hydrochloric acid. Arsenic and iron or liver extract may help anemia. Pemberton has shown that the delayed sugar-removal observed in arthritis can be restored to normal by the ingestion of vaso-dilators, such as sodium nitrite and similar drugs. Iodin in some form at times seems to make the patient more comfortable, and there have been several favorable reports from the use of ortho-iodoxy-benzoic acid.

The diet in rheumatoid arthritis should be adapted to the individual case. It is illogical to give the obese a high caloric diet or to give the under-nourished and anemic a low-protein, low carbohydrate diet. Whatever the diet, it should be rich in vitamin content.

Measures that improve circulation, increase metabolism, or encourage removal of waste products have a beneficial effect on the disease. Regular exercise, massage, heliotherapy and colonic irrigations are helpful, and orthopedic care is essential in many cases.

Due regard must, of course, be paid to the removal of foci of infection, though promises of relief must be conservative. The joint lesions are apparently the result of metastatic infection. Removal of a focus of infection does not always cure, as everyone knows. Rowntree and Adson have called attention to the effects of sympathetic ganglionectomy and ramisection with remarkable results in some cases. Though this procedure very evidently would not directly eliminate infection, it may alter tissue reaction against infection with the resulting removal of disability and deformity.

If the treatment of rheumatoid arthritis had to end with these familiar and briefly sketched measures, it would not always be very satisfying to the physician or helpful to the patient. We are, fortunately, not at the conclusion but at the point of departure of a new, and, as we believe, a better method of treatment.

Recent studies by numerous investigators, among whom may be mentioned Cecil, Rosenow, Hastings, Moon and Edwards, Clawson, Gray and Gowen, Kendall, Klugh, Kracke and Teasley, Margolis and Dorsey, and others, show what appears to be a very definite relationship between streptococcic and rheumatoid arthritis. As to the actual type of streptococcus causing this infection, there seems to be some difference of opinion. There are likewise reports of the finding of diphtheroid bacilli, reports too persistent to be disregarded. For example, Hadjopoulos and Burbank took blood cultures in one hundred and forty-five cases

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of rheumatoid arthritis and report the finding of diphtheroid bacilli in eight cases. Moon and Edwards, Cecil, and others have called attention to the findings of diphtheroid bacilli as well as streptococci in blood cultures. The idea suggests itself that there may be in rheumatoid arthritis a condition analogous to pneumonia, where a fairly definite syndrome may result from one of several organisms. Pneumonia is usually caused by the pneumococcus, though other bacteria are occasionally responsible for the infection. Furthermore, there are distinct types of pneumococci, and the same type does not always predominate but may vary with the locality or season. The evidence submitted by Cecil and his associates indicates that chronic infectious arthritis is due usually to a specific streptococcus, but also, perhaps, at times to some other organism, particularly a diphtheroid. It is well known that the gonococcus may produce a chronic arthritis which cannot be differentiated clinically from the usual rheumatoid type of the disease.

My own interest in the subject was aroused chiefly by Cecil's work, in which he suggested a method of specific treatment, and in this paper I shall confine myself to a report of typical cases of rheumatoid arthritis as thus defined by him: "Cases of polyarthritis with swelling and often with some deformity and ankylosis of the joints affected. The patient, usually the neurotic type, gives a history of sudden or gradual development of pain, stiffness and swelling of several joints. He often dates the onset of his symptoms to some disturbances in his physical equilibrium, such as trauma and acute infection, exposure to cold, or surgical operation. Occasionally the onset of symptoms dates back to an attack of rheumatic fever. When the onset is sudden, the patient may run an irregular fever, varying from 99 to 101 degrees F., but, when the onset is insidious, the temperature usually remains normal. The disease is almost always migratory in its early stages, jumping from joint to joint much as in rheumatic fever. After several attacks, however, the joints chiefly affected become permanently injured and the process assumes a persistently chronic course."

In conjunction with Aubrey H. Straus, a method of examining blood cultures has been developed which was adapted from the method of Cecil and his associates, their method in turn having been adapted from Clawson. Briefly, 30 to 50 c.c. of blood is taken aseptically from the arm. Approximately 5 c.c. of this is inoculated in a bottle of infusion agar broth and the remainder placed in two sterile test tubes and allowed to clot. The next day each tube is centrifuged and the serum drawn off. The clot is then broken up with a blunt pipette. The fragments of clot are then drawn in the same pipette and inoculated into 50 c.c. of infusion broth. The risk of contamination is great, even with the utmost care, hence, the contents of each tube are put in a separate bottle so as to lessen the chance of loss. At the end of four or five days, unless growth is noted sooner, each culture is examined microscopically. This is repeated at similar interintervals for thirty days or more. If growth appears, blood agar plates are made and the culture further studied on suitable media.

By applying this method, one or more blood cultures were made from 138 patients with typical rheumatoid arthritis. All except six of the cases were ambulatory. With four exceptions, the patients were free from fever at the time cultures were taken. The ages of the patients varied from sixteen to seventy-eight years. The blood cultures of fifty-six of the series, or 40.6 per cent, were found positive. In thirty-nine of the positive cultures, an organism resembling the "typical strain" of streptococcus described by Cecil, Nicholls and Stainsby was found; in thirteen cases a gram-positive diplococcus was recovered. Cultures in which staphylococci were found were considered contaminated. The streptococci are small and gram positive, usually in short chains when first isolated. The chains become longer as the organism becomes better adapted to the medium. Marked pleomorphism is often present. The colonies on blood agar frequently show hemolysis and only occasionally a greenish color. There is often a brown tinge to the colonies on blood agar after two or three days. The original bottle in which the organism first appears often shows a brownish-green color just above the surface of the blood. The streptococcus grows best in subcultures in media to which serum or blood has been added.

The streptococci do not appear to be all the same. They often differ in their reaction toward the gram stain, some being more definitely gram positive than others. A few have shown hemolysis but most do not, even after long cultivation. Fermentation reactions are irregular. Most of them ferment dextrose, lactose, salicin and sucrose, but fail to ferment

mannite. Several ferment mannite but not sucrose, and others ferment all five of these sugars.

Mellon's work, in which he described the close relationship between diphtheroid bacilli and streptococci seemed to have a decided bearing on this work. Mellon's method was therefore employed and after persistent effort, successful results were obtained and many of the organisms considered diphtheroid bacilli at the time of their isolation assumed a true streptococcal form. It is entirely possible that the morphology of the organism as it is found in the blood cultures is dependent either upon some factor of resistance in the patient, as suggested by Koch and Mellon, or else upon some pecularity of the particular culture media employed.

Agglutination studies were not undertaken in my series of cases until October 30, 1930. In sixty-five cases of clinically typical rheumatoid arthritis, specific streptococcal agglutinins for Cecil, Nicholls and Stainsby's "typical strain" have been demonstrated in forty-eight, or 89.2 per cent of the series. Blood cultures have been taken from more than one hundred cases of degenerative or "hypertrophic" arthritis, all of which have been negative, and agglutination reactions have been persistently negative in these hypertrophic cases.

In the agglutination tests a live antigen is used. This is prepared from a twenty-four hour bouillon culture of the "typical" arthritic streptococcus, B-13, obtained from Cecil. The organism is grown in beef heart infusion medium and must be well diffused throughout. The patient's serum is run against this in dilutions from 1-20 to 1-10,240. The tubes are allowed to remain in the water bath at 56C. for two hours, and after standing in the refrigerator overnight, the test is read. A positive report is not given unless the serum agglutinates as far as the 1-320 dilution. The more positive sera often agglutinate several tubes further. As a live antigen is used, the test results may vary from day to day. A known positive serum and a negative are always used as controls. The test is also duplicated before the report is given.

If repeated cultures are taken from a typical case of rheumatoid arthritis after massage or exercise, the percentage of positive cultures will be much greater. When negative cultures are obtained, joints should be tapped or adjacent lymph glands removed for culture for the typical strain of streptococcus.

In all of the rheumatoid cases that yielded positive cultures, autogenous vaccines were prepared and were used in connection with other treatment. In preparing the vaccine, the streptococcus is grown in dextrose broth to which serum or ascitic fluid has been added. The cultures are centrifuged, washed in .9 per cent saline with .6 per cent phenol added as a preservative. The organisms are suspended again in the same solution. The density is adjusted to approximately one billion per c.c. for subcutaneous injection. This is diluted 1-1000 for intravenous injections. Injections are given at weekly intervals and begin with five hundred thousand killed organisms per injection. Reactions have been very rare and too mild for discussion.

I wish to cite two cases in which improvement after vaccine treatment was particularly marked:

Case 1.—White, female, aged 32 years, first seen March 23, 1927, complaining of acute pain in many joints. The onset of her illness was four years previously, with pain and swelling in the fourth toe of the right foot. The disease gradually affected the knees, hips, fingers, wrists, spine, and temporo-maxillary joints. She was fairly well-nourished, but had lost ten pounds in weight during this time.

Past History.—Typhoid fever in childhood and the usual childhood diseases; phlebitis of unknown origin one year previously.

Past Treatment. — Atophan, salicylates, physiotherapy, massage, baths. Tonsils, appendix, left ovarian cyst and several teeth removed. A great variety of diets; acidophilic milk for one year with elimination of raw milk and eggs. Daily administration of magnesium sulphate and streptococcus vaccine.

There was no relief and the disease continued to spread; a routine physical examination, including X-ray of teeth, sinuses, and gastro-intestinal tract, was essentially normal, except for the swelling and pain in various joints.

Laboratory Examination. — Wassermann negative. Cultures of nose and throat and repeated stool cultures showed nothing abnormal. Urinary examination: 24-hour specimen normal. Blood chemistry: Sugar, 84 mg. per 100 c.c. Urea nitrogen 10 mg. per 100 c.c. Icterus index 6. Basal metabolism, minus 14. Red blood count 3,640,000; white blood count

XUM

5,400; hemoglobin 60 per cent; differential count normal. Temperature normal, as a rule.

A general diet rich in red meats, citrus fruits and green vegetables, without milk, was prescribed. Regular periods of rest; exercise; sun baths; massage and baking the joints; regulin, three teaspoonfuls with cooked fruit at supper-time for bowels; thyroid extract, 1 gr. twice daily; neocinchophen, gr. 10, as necessary for discomfort. Six injections of amydoxyl of 1 gram each were given at intervals of three days. The reactions were not marked, the maximum temperature being 102 degrees F. after injection.

For a period of four months she seemed considerably improved. Greater motion became possible in all joints and pain diminished. Soon after this, however, there was an exacerbation of the arthritis, during which a streptococcus viridans was isolated from the blood after four weeks incubation of the culture. An autogenous vaccine was made from the streptococcus, and has been given with occasional periods of rest ever since. She has gained six pounds in weight, and is now practically free from pain. The swelling of the joints has definitely diminished, her hemoglobin is 90 per cent, red blood count 4,600,000, and she is living a comparatively normal life.

Case 2.—White, female, aged 60 years, first seen April 24, 1929, complaining of acute pain in the joints of the left side of the body, particularly the left foot, left knee, left hip, fingers, wrist, elbow and shoulder joints. The onset of her illness was thirty years previously, with pain and swelling in the third and fourth toes of the left foot and gradually affected the left knee, hip, elbow, fingers, wrist and shoulder joint. For one year she had been practically bedridden.

Past History.—The usual infectious diseases of childhood; an operation for removal of fibroid of the uterus, left cystic ovary and appendix in 1915.

Past Treatment.—Atophan, aspirin, all sorts of intravenous injections, physiotherapy, extraction of all teeth and removal of tonsils. When first seen she was taking about 2 gr. of codein, 6 allonal tablets, and 6 aspirin tablets per day for relief of pain. All kinds of diets had been tried.

The disease had spread very insidiously until the left elbow was contracted practically at right angles and she was unable to close the left hand. Her temperature varied between 98.6 degrees F. and 100 degrees F. A complete physical examination revealed, in addition, to the arthritis, slight tenderness over the region of the colon, slight enlargement of the heart, moderate hypertension (blood pressure systolic 160, diastolic 110), and marked under-nutrition.

Laboratory Examination. — Wassermann negative. Stool cultures negative. Urinary examination negative except for three or four pus cells per high-power field in the catheterized specimen. Blood chemistry: Sugar 100 mg. per 100 c.c. Blood urea nitrogen 34 mg. per 100 c.c. Blood count: Hemoglobin 55 per cent, red blood count 3,200,000, white blood count 8,000, differential normal. Basal metabolism minus 8. Gastric analysis showed achylia.

A general diet rich in red meats, citrus fruits and green vegetables, with cream, one pint, every twenty-four hours, was prescribed, with Alpine therapy, massage and baking of joints, and colonic irrigations every other day; also thyroid extract, ½ grain twice daily, and a gradual withdrawal of codein, allonal and aspirin, substituting neocinchophen, gr. 10, as necessary for discomfort. Dilute hydrochloric acid, ½ dram, in orange-ade was sipped with meals. A long-chained non-hemolytic streptococcus was isolated by blood culture. After full dosage of the autogenous streptococcus vaccine was established, the patient began to be remarkably free from pain, and the joints were more readily movable. She has gained fifteen pounds in weight since first seen, goes up and down steps and out for short walks and automobile rides, and states that she is more comfortable than she has been for eight years. Her temperature has been normal for nine months. Her hemoglobin has increased to 65 per cent and her red blood count to 4,000,000.

It is hard, of course, to say just how much of the benefit obtained in these two cases is referable to the autogenous vaccine. However, when measures used in treatment of the patient's general condition (correction of metabolism, anemia, nervousness, treatment of the very frequent achylia, colonic irrigations, removal of foci of infection, administration of low carbohydrate or low purine diet, baking, massage, and vasodilators) have failed to give visible improvement, and when these measures are tried *together with* vaccine therapy, and arrest or cure of the disease occurs, it seems

probable that there is something more to vaccine treatment than psychotherapy. We suspect that the reason for the low percentage of positive blood cultures obtained in some quarters is the failure to select typical cases of rheumatoid arthritis as stressed by Cecil. If the condition in the joints is one of bacterial allergy, here, again, for cure we are dependent for best results upon specific densenitization against the offending organism. In my series of cases, the best results have been obtained from the intravenous administration of the streptococcus vaccine, which in many instances has produced almost immediate amelioration of symptoms of the rheumatoid condition.

Summary and Conclusions

1. In 138 cases of typical rheumatoid arthritis, blood cultures yielded streptococci in thirty-nine, or 28.2 per cent, of the series. In thirteen other cases, or 9.4 per cent, a gram-positive diplococcus was recovered from the blood stream.

2. Many of the streptococci recovered from the blood of arthritic patients were considered diphtheroid bacilli at the time when they were first isolated. Later, when cultivated under certain conditions, they took on the form of streptococci.

3. In sixty-five cases of clinically typical rheumatoid arthritis, specific streptococcal agglutinins were demonstrated in the patient's serum in forty-eight cases, or 89.2 per cent of the series.

4. Whenever possible, autogenous streptococcus vaccine is prepared and administered to the arthritic patient over a period of several months. Many patients show striking improvement under this treatment.

5. There is considerable evidence to support the theory that rheumatoid arthritis is a streptococcal infection, and that streptococcus vaccine has an important place in the modern therapy of this disease.

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HEMARTHROSIS.*

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The treatment for hemarthrosis as outlined in this paper is an original form of treatment as far as I have been able to determine by a review of the literature. This condition was at one time called "congealed blood in the joint." In the type of cases in which the hemorrhage was severe, disability was for a period of a year or more with a percentage of permanent disability. At one time these conditions were treated by the application of a

*Read before the Roanoke Academy of Medicine, April 4, 1932.

plaster cast; every few weeks the cast was removed and another applied until it was thought the congealed blood had absorbed. At another time the treatment consisted of making a small incision on each side of the knee joint, inserting the finger into the knee joint to break up blood clots, evacuating them and putting in "waiting" sutures, irrigating the joint, and after several days closing the "waiting" sutures. Treatment through various stages has been absolute rest, ice-bags, strapping and blistering, and the treatment itself was probably the cause of as much disability as the hemarthrosis.

In an article published November 21, 1896, by J. O'Conor,[1] Trinity College, Dublin, he states, "I think there can be no practical reason why the aspirating needle should not be used in the majority of cases as a mere diagnostic agent in order to find exactly the condition we are called upon to cure. Without seeing the fluid we cannot properly treat the case, nor can we give a correct prognosis. Possibly, in the near future, the development of the roentgen rays may even render such a test unnecessary." This is the first notation that has been found in a search of the literature wherein the use of a needle to aspirate a joint has been suggested. O'Conor states that he feels certain that effusion of blood following injury to the knee joint is much more common than is ordinarily supposed. That condition still exists. The danger of blood gravitating back to the joint from the very puncture itself is mentioned by O'Conor but has not occurred in this series, or if it has occurred it has not been to such an extent as to change the end results.

There is an article on treatment of hemarthrosis of the knee by M. le Dr. Routte,[2] of France, published in 1909. He states that about ten years previously he began systematically to employ puncture in all traumatic effusions of the knee and that his cases exceeded sixty. He states that a large hemarthrosis is due to bony lesions. This, however, is not necessarily true. He used a trocar of medium caliber, as he felt it was useless to employ a large one because the introduction thereof was painful. He states there was no danger of air penetrating into the cavity, and that a second puncture was sometimes necessary but never a third. If local anesthesia is properly done the size of the trocar does not matter.

There is an article written by Charles C. Carr,[3] Lexington, Ky., which was read at the Southern Medical Association in the Section on Railroad Surgery in 1930, and published in the *Southern Medical Journal*, in one paragraph of which he states that "Treatment is aspiration if the knee joint can be emptied. This is followed by tight adhesive strapping. Aspiration is repeated as often as necessary."

The anatomy of the knee will not be gone into further than to state that in dealing with the knee joint we have to consider the lower ends of the femur, the upper ends of the tibia, the patella, the semilunar cartilages, lateral ligaments, crucial ligaments, posterior ligaments, anterior covering of the knee, synovial membrane, vessels and nerves. The strength of the knee joint is almost unlimited as joints are considered.

Wilson and Cochrane,[4] second edition, state that there are certain conditions, if effusion does not clear up readily, or if it is under considerable tension, in which aspiration is indicated. There are a number of books of recent date which have been reviewed and this condition is scarcely referred to, except in conjunction with other injuries.

Up to twenty months ago the treatment at the Lewis-Gale Hospital has been aspiration of the knee joint, withdrawal of all fluid possible, using a No. 16 Luer needle, local anesthesia, 2 per cent novocain, and then the application of an ace bandage. This withdrawal of fluid sometimes had to be repeated six or eight times, the period of disability extending from two or three weeks to three or four months. Usually there was no permanent disability.

The treatment employed in this institution in thirty-two cases treated during the past twenty months is simply withdrawing fluid under local anesthesia with a No. 16 Luer needle; injecting as much, if not more, air into the knee joint than fluid withdrawn; then applying an ace bandage. In this series of cases the temporary disability has been reduced to an average of twelve days in the cases in which the diagnosis is simple hemarthrosis. Permanent disability has not occurred in these cases.

The point of aspiration is varied. Pressure is made above the patella on the lower part of the femur or thigh anteriorly, and the point of aspiration is about one-half inch to the right or left of the lower end of the patella, depending upon the point of greatest bulging. Using

local anesthesia, the needle is carried straight through the joint capsule. If novocain solution is injected in a straight line, as a rule it will be painful, but if the anesthetic solution, 2 per cent novocain, is carried about one-half inch to each side of the line where the needle is to be inserted, there will be no pain. Great care is taken to express all fluid possible. This is done slowly and painstakingly. A 30 c.c. syringe is used to inject air; our policy in the beginning was to inject an amount of air equal to the amount of fluid withdrawn. The policy adopted later is to inject air until the knee joint feels tight. An ace bandage is used then to make as much pressure over the knee joint, for three or four inches below and three or four inches above, as can be tolerated without interference with circulation of blood.

Experience teaches that hemarthrosis will often correct itself without any operation or treatment, but the period of disability is much longer and there is sometimes a permanent disability. Several articles have stated that removal of pressure in knee joints relieves pain.

Case No. 1.

When fluid, whether it is blood or a serotype of fluid, has been withdrawn from the knee and air has been injected, the patient has immediate relief from pain. Even though the pressure of only 30 c.c. of fluid may have been withdrawn and 50 c.c. of air injected, and the knee is tighter, the knee is immediately relieved of pain, which is conclusive of the fact that it is the irritation of the fluid in the joint which causes the pain and not the tightness thereof. The patient is allowed to leave the hospital. He is not given crutches, but is advised to take much rest and to report the next day for observation.

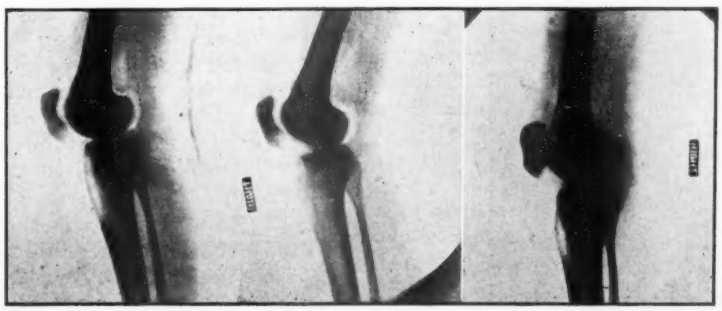
Several of these cases are worth individual consideration.

C. A. (No. 1).—This is an uncomplicated case in which 30 c.c. of bloody fluid were removed and 30 c.c. of air injected. Patient returned to work in two weeks. X-ray picture No. 1 does not show up very well because a very small amount of air was injected.

H. B. (No. 2).—100 c.c. of bloody fluid were withdrawn the day after injury; 100 c.c. of air injected. On account of a complicating comminuted fracture of right patella patient was disabled forty-five days This case was not used in the classification of simple hemarthrosis cases because, if he had had hemarthrosis and nothing else, it is not known what the exact period of disability would have been. X-ray film No. 2 (a) shows knee before aspiration of fluid; (b) shows knee after injection of air; (c) shows knee fifteen days later.

C. B. (No. 3).—This patient is mentioned because of his quick recovery; he returned to work seven days after injury. 30 c.c. of blood were removed and 30 c.c. of air injected. X-ray picture No. 3 does not show a large injection of air.

E. C. (No. 4).—This patient had 50 c.c. of thick, mucilaginous, straw-colored fluid removed and 60 c.c. of air injected November 23, 1931. On December 22, 1931, knee was



Case No. 2.

again aspirated and 4 c.c. of fluid were removed and 20 c.c. of air injected. This patient had acute arthritis of the right knee which

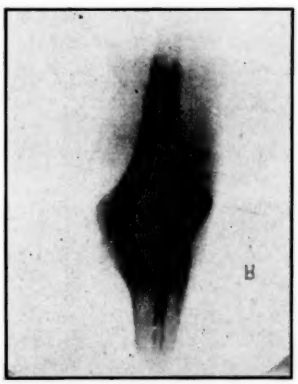
Case No. 3.

was secondary to erysipelas of face due to infection of contuso-lacerated wound of face. The result was very gratifying and we believe it can be attributed to the injection of

Case No. 4.

air. X-ray picture No. 4 was taken before injection of air.

E. F. (No. 6).—X-ray film No. 6 of this

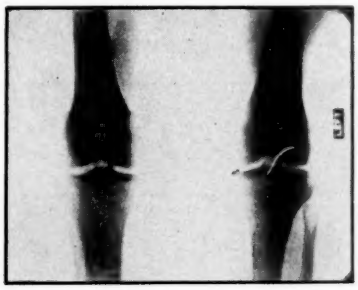


Case No. 6.

patient is shown because this was a septic knee which was probably due to gonorrheal arthritis and improved remarkably. The patient had a history of disability extending over a year previous to this treatment. Only 30 c.c. of air were injected because patient found out we were "blowing her knee back up" and made us discontinue. X-ray film No. 6 was taken after injection of air. This film has a milky, dirty appearance so often noted on films of certain septic joints.

Following is a series of illustrative cases.

C. F. (No. 7).—30 c.c. of blood were removed and 50 c.c. of air injected As far as we could determine the patient was entirely well inside of eleven days. He did not, however, return to work then because of tenderness over anterior attachments of both external and internal semilunar cartilages of left knee. X-ray film No. 7 was taken after injection of air.

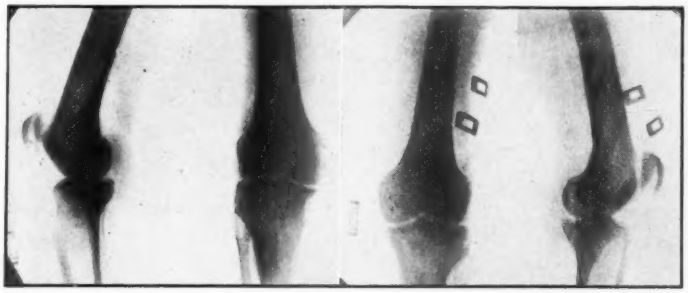


Case No. 7.

J. H. (No. 9).—A high school boy, age 17, was playing football and injured his knee November 3, 1930. He was treated by rest and hot applications. Patient first came to this clinic on November 14, 1930, with history of no decrease in size of knee since day of injury. Swelling started immediately after injury and increased until next day. Aspiration was done immediately: 150 c.c. of blood were removed and 130 c.c. of air injected. The rule of injecting as much, if not more, air was here violated because 130 c.c. of air made knee tight. Patient reported at the clinic every few days. He was dismissed in two weeks with no disability.

F. J. (No. 15).—This is a colored patient who did not report for examination until ten days after injury. 20 c.c. of old blood were removed and 40 c.c. of air injected. This patient was off from work twenty-five days. It was

believed that the knee condition did not justify his being off more than two weeks but his insurance while off was practically the same as his income while working. X-ray film No. 15 (a) shows knee before aspiration; (b) shows knee after injection of air.



Case No. 15.

W. L. (No. 18).—This patient did not report for examination until two months and six days after injury. Knee was caught between engine cab and tank. 60 c.c. of thick, mucilaginous, amber-colored fluid were removed and 50 c.c. of air injected. This patient was recovering from pneumonia when he was given knee treatment. It was several months before he could return to work but the knee condition cleared up promptly. X-ray film No. 18 (a) shows knee before aspiration; (b) shows knee after injection of air.

Case No. 18.

L. F. L. (No. 19).—This patient came to the clinic complaining of pain on walking and of his knee being swollen seventeen days after he had struck his left knee against a car door. 30 c.c. of straw-colored, thick, mucilaginous fluid were removed; 40 c.c. of air injected. Immediately after injection of air patient stated he had no pain but was tender over anterior attachments of external and internal semilunar cartilages of left knee. It is impossible to state whether this patient had a hemarthrosis to begin with or an accumulation of fluid from injury to semilunar cartilages. It is interesting to know, however, that all pain was immediately relieved except pain on pressure over anterior cartilaginous attachments. This patient should have semilunar cartilage removed later but was advised against doing so at present. X-ray film No. 19 was taken after injection of air.

Case No. 19.

R. M. (No. 21).—This patient had a hypertrophic arthritis of right knee. He fell, catching right knee under him. The day he was injured 50 c.c. of thick, straw-colored, mucilaginous fluid were removed and 60 c.c. of air injected. This case is mentioned because it is questionable whether the fluid could have come from this injury. This was probably an accumulation of fluid from old hypertrophic arthritis. He was dismissed in thirty-six days with complete recovery from a painful knee which had troubled him for several years. X-ray film No. 21 was taken after injection of air.

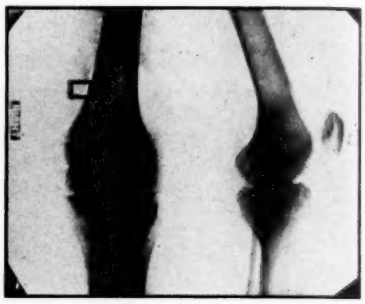
W. G. P. (No. 24).—This patient had an

automobile accident which caused a fracture of the outer condyle of the right femur. 50 c.c. of blood were withdrawn the day after

Case No. 21.

accident and 60 c.c. of air injected. Patient had immediate relief from pain and there was no more accumulation of fluid after this treatment. On account of the fracture patient did not return to work for eight weeks from date of injury. X-ray film No. 24 was taken after injection of air.

M. S. (No. 25).—This patient fell down an embankment and fractured her left patella. Ten days after injury no absorption of fluid was noted. 60 c.c. of blood were withdrawn and 100 c.c. of air injected. After this no more trouble was had with accumulation of



Case No. 24.

fluid in knee joint. Patient refused fascia

Case No. 25.

lata operation. She did secure good fibrous

HEMARTHROSIS WITHOUT COMPLICATIONS

No.	Name	Age	M. or F.	W. or C.	R. or L. Knee	Date of Inj.	Date of Apiration	C. C. Fluid Asp.	C. C. Air Inj.	Type of Fluid Asp.	Period of Disability	How Injured.
1.	C. A.	23	M.	W.	R.	8-20-31	8-27-31	30	30	Blood	14 days	Stepped on lump of coal and twisted knee.
3.	C. B.	25	M.	C.	L.	5-4-31	5-4-31	30	30	Blood	7 days	Stepped off truck and sprained knee.
7.	C. F.	41	M.	W.	R.	2-13-31	2-15-31	30	50	Blood	11 days	Boarding train and twisted knee.
9.	J. H.	17	M.	W.	L.	11-3-30	11-14-30	150	130	Blood	No dis.	Ball player tackled him and injured knee.
10.	O. F. H.	44	M.	W.	R.	9-23-31	9-24-31	90	70	Blood	12 days	Automobile accident.
11.	J. T. H.	32	M.	W.	R.	8-22-30	8-29-30	45	75	Blood	13 days	Knelt down on gravel and upon trying to rise could not straighten knee.
14.	J. H. H.	36	M.	W.	L.	1-5-32	1-5-32	40	50	Blood	15 days	Fell into pit.
15.	F. J.	35	M.	C.	R.	8-10-31	8-20-31	20	40	Blood	25 days	Wheelbarrow struck knee.
28.	W. W.	32	M.	W.	L.	7-4-31	7-15-31	30	60	Blood	16 days	Playing golf.
29.	H. W.	17	M.	W.	L.	9-7-30	10-13-30	75	100	Blood	6 days	Struck by auto. Injured 9-7-30 but had no trouble with knee until 10-12-30 when he thought he felt something slip in knee.

HEMARTHROSIS OF KNEE

No.	Name	Age	M. or F.	W. or C.	R. or L. Knee	Date of Inj.	Date of Aspiration	C.C. Fluid Asp.	C.C. Air Inj.	Type of Fluid Asp.	Period of Disability from date of Aspiration	% of Perm. Dis.	Complications	How Injured
1.	C. A.	23	M.	W.	R.	8-20-31	8-27-31	30	30	Blood	2 weeks	None	None	Stepped on lump of coal and twisted knee.
2.	H. B.	25	M.	W.	R.	12-19-30	12-20-30	100	100	Blood	45 days	None	Compound fracture right patella	Getting off truck, fell and struck knee against ground.
3.	C. B.	48	M.	C.	L.	5-4-31	5-4-31	30	30	Blood	7 days	None	None	Stepped off truck and sprained knee.
4.	E. C.	51	M.	W.	R.	9-17-31	11-23-31	50	60	Serum	55 days	None	Acute arthritis, knee	Struck by lump of coal in mine.
							12-22-31	4	20				Erysipelas, face	
5.	F. C.	28	M.	W.	R.	12-25-31	12-26-31	120	150	Blood	Last seen 1-29-32	None	Comminuted fracture, right tibia	Was wrestling and partner tripped him.
							1-8-32	60	30					
6.	E. F.	40	F.	W.	R.	7-1-31	8-15-31	120	30	Pus	Last seen 9-17-31	50%	Septic right knee. Infectious arthritis	No history of injury. Knee began to swell about 6 weeks prior to admission to hospital.
7.	C. E. F.	41	M.	W.	R.	2-13-32	2-15-32	30	50	Blood	11 days	None	None	Boarding train and twisted right knee.
8.	W. F.	50	M.	W.	L.	12-22-31	2-15-32	30	60	Serum	2 weeks	None	Traumatized internal semilunar cartilage	Was kneeling down at work and felt pain in knee when he straightened up.
9.	J. H.	17	M.	W.	L.	11-3-30	11-14-30	150	130	Blood	No dis.	None	None	Ball player tackled him and injured left knee.
10.	O. F. H.	44	M.	W.	R.	9-23-31	9-24-31	90	70	Blood	12 days	None	None	Automobile accident.
11.	J. T. H.	32	M.	W.	R.	8-22-30	8-29-30	45	75	Blood	Last seen 9-12-30	.....	None	Knelt down on some gravel and upon trying to rise, could not straighten knee.
12.	M. H.	19	F.	W.	L.	11-1-31	12-23-31	120	90	Pus	Last seen 1-19-32	25%	Septic arthritis, knee	Automobile accident.
13.	J. F. H.	29	M.	W.	R.	6-30-30	7-9-30	40	60	Blood	18 wks.4 das.	None	Removal of internal semilunar cartilage	Pumphead fell on knee.
14.	J. H. H.	36	M.	W.	L.	1-5-32	1-5-32	40	50	Blood	15 days	None	None	Fell into pit.
15.	F. J.	35	M.	C.	R.	8-10-31	8-20-31	20	40	Blood	25 days	None	None	Wheelbarrow struck knee.
16.	R. F. K.	49	M.	W.	L.	1-4-32	1-4-32	75	90		Still dis.		Fracture of tibia and fibula	Struck by automobile.
17.	T. P. L.	54	M.	W.	L.	1913(?)	10-21-31	40	50	Serum	11 days	None	Fractured external semilunar cartilage removed	Patient subject to "slipping of something in left knee for 18 years. 10-31-31: Knee locked and patient could not get it back."
18.	W. H. L.	46	M.	W.	L.	8-30-30	1-20-31	60	50		1 year	None	Lymphatic and venous disturbance Pneumonia	Caught knee between engine cab and tank.
19.	L. F. L.	37	M.	W.	L.	1-21-32	2-9-32	30	40	Serum	Still dis.	None	Traumatic semilunar cartilage. No operation yet	Struck left knee against car door.
20.	W. M.	43	M.	C.	R.	12-5-31	12-7-31	75	90	Blood	12 wks. 2 das.	None	Incomplete fracture head and neck, right fibula	Struck by automobile.
							12-21-31	50	70					
21.	R. M.	60	M.	C.	R.	10-16-31	10-16-31	50	60	Serum	36 days	None	Hypertrophic arthritis, knee	Fell, catching right knee under him.
22.	C. D. M.	23	M.	W.	L.	11-30-31	12-3-31	50	60	Blood	Still dis.		Comminuted fracture, tibia and fibula	Motor car ran over patient.
23.	E. M.	46	M.	W.	L.	11-21-31	11-22-31	45	50	Serum	5 wks. 1 day		Excoriation of knee	Fell from coal loading motor, striking left knee against floor or post.
							12-12-31	30	40				Hypertrophic arthritis	

HEMARTHROSIS OF KNEE

No.	Name	Age	M. or F.	W. or C.	R. or L. Knee	Date of Inj.	Date of Aspiration	C.C. Fluid Asp.	C.C. Air Inj.	Type of Fluid Asp.	Period of Disability from date of Aspiration	% of Perm. Dis.	Complications	How Injured
24.	W. G. P.	39	M.	W.	R.	9–8–31	9–9–31	50	60	Blood	2 months	None	Fracture of outer condyle, right femur	Automobile accident.
25.	M. S.	39	F.	W.	L.	1–10–31	1–20–31	60	100	Blood	7 months	10%	Fracture and re-fracture, left patella	Fell down embankment.
26.	E. D. T.	54	M.	W.	L.	11–3–30	11–4–30	50	60		Last seen 12–11–30		Strain of ligaments, knee	Fell about 15 ft, landing on knee.
27.	W. V.	62	M.	W.	R.		6–26–31	105	40	Serum	6 days.	None	Diabetes mellitus. Acute arthritis, knee	No history of injury.
28.	W. W.	32	M.	W.	L.	7–4–31	7–15–31	30	60	Blood	17 days	None	None	Playing golf.
29.	H. W.	17	M.	W.	L.	9–7–30	10–13–30	75	100	Blood	6 days	None	None	Struck by auto 9–7–30. No trouble with knee until 10–12–30 when he thought he felt something slip in knee.
30.	R. B. D.	48	M.	W.	L.	3–1–32	3–3–32	50	70	Blood	Still disabled		Transverse fracture thru patella.	Automobile accident.
31.	L. S.	40	F.	W.	L.	3–1–32	3–2–32	30	50	Blood	Still disabled		Fracture, patella	Fell, injuring knee.
32.	A. B. B.	26	M.	W.	L.	3–5–32	3–5–32	90	60	Blood	Still disabled		Fracture, upper end of tibia and tuberosity	Motorcycle accident.

union with a good result. Fragments of knee cap were held together with adhesive. X-ray film No. 25 shows knee before and after aspiration.

It is worth noting that there were never any complications in this series of cases that could be attributed to injection of air or needle pentrating the knee joint cavity. The treatment is very simple and does not require hospitalization for a simple hemarthrosis. Treatment is entirely worth while where there is an accumulation of fluid from a chronic arthritis. The patients are relieved immediately from pain and even though knee is tighter following the injection of air they are able to carry knee through nearly normal motions without pain. The technic in performing this operation has not been gone into thoroughly as it probably will not be attempted by any one except by those who are familiar with proper surgical technic. This article is not written in the thought that it may be conclusive, but in the hope that it may point the way so others may try this line of treatment and that there may be eventually an accumulation of enough cases so that conclusions may be definitely formed.

On account of the simplicity of treatment, the lessened period of disability, and no complications having followed air injection, this treatment is being used for this type of cases at the Lewis-Gale Hospital.

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CLINICAL EXPERIENCE WITH FOLLICULAR AND ANTERIOR PITUITARY SEX HORMONES: A STUDY OF THE RESULTS OF TREATMENTS IN 120 PATIENTS.

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In a preliminary communication[1] our clinical experience with the follicular and the anterior pituitary luteinizing hormones in the treatment of forty patients with various disorders of menstruation was reported. This article is a study of 120 patients to whom these

hormones were administered. These studies were begun at the University of Virginia Hospital and have been continued at the Duke University Hospital.

These patients were selected carefully and they were given complete clinical, laboratory and metabolic examinations, as we have previously outlined.[2] They presented definite menstrual abnormalities and subjective symptoms which were thought to be related. The progress of the patients was followed by menstruation charts and symptom lists. A sincere attempt has been made to evaluate properly our results.

We are grateful to the Department of Experimental Medicine of Parke, Davis and Company for generous supplies of follicular hormone (Theelin) and of the anterior pituitary luteinizing hormone (Antuitrin-S). Recently we have been afforded also allotments of an ovarian hormone (Theelol) which is said to be active orally; our clinical experience with it has been too incomplete to report.

The follicular hormone has been furnished to us as a clear solution in 1 c.c. ampoules and has been standardized upon spayed mature rats; its potency has been 50 r.u./c.c. The solution is said to be prepared from Theelin crystals, the solvent being 0.1 per cent sodium hydroxide.

The anterior pituitary luteinizing hormone has been supplied to us as an amber liquid in 10 c.c. vials. It is assayed upon sexually immature rats. The potency is said to be approximately 50 r.u./c.c. Recently it has been supplied with a potency of 100 r.u/c.c. It is a solution of an impure amber powder, which contains the active hormone. The percentage of solids in this solution is quite high. Although the solution of anterior pituitary luteinizing hormone is standardized by its production of excessive luteinization (APR III) in the ovaries of immature rats, there is observed frequently also evidence of follicular stimulation.[3] This is interpreted to mean that it is either a mixture of Prolan A and Prolan B or that the reactions attributed to these latter hormones are in reality those of a single anterior pituitary sex hormone.

The route of administration of these hormones has been intramuscular, except in a few instances in which vaginal suppositories, each containing 50 r.u. of the follicular hormone, were used. Injections have been given daily in dosage of 100 r.u. for intervals of two weeks with rest intervals of two weeks. This regime was repeated as often as it seemed necessary. The character of the menstrual disorder and its associated symptoms determined variations in the hormones used and in the time of administration in relation to the phases of the menstrual cycle. The specific system of dosage will be described as each type of menstrual disorder is discussed. It has been impossible in a number of instances to give daily treatments by injection; local physicians of remote patients have cooperated kindly in continuing treatments that we have outlined; however, the economic status and the remoteness of the patient from willing medical hands have materially curtailed this series. Our hopes are that Theelol will prove sufficiently active and effective to make it available for this type of patient. We have had no experience with the nasal administration of the follicular and luteinizing hormone as described by Pratt and Smeltzer.[4] It might be of distinct advantage in these patients.

Tabulation of Patients Treated

The patients, the results of whose treatments are reported, are classified according to the presenting menstrual abnormality: menopause, amenorrhea, oligo- and hypomenorrhea, hypermenorrhea, and miscellaneous. The results are evaluated from the standpoint of the relief of subjective symptoms, the correction of the menstrual disorder and the permanancy of improvement and are denoted as follows: complete ++++, good +++, moderate ++, slight +, none —.

I. Menopause:

There have been included in this group only those patients whose menstruation had ceased. Those with scanty menstruation and symptoms adjudged to be due to the approaching menopause have been grouped under oligo- and hypomenorrhea.

The follicular hormone has been used exclusively in this group. Treatments were not complemented with any sedatives. The system of treatment has been to give, as the rule, daily injections of 100 r.u. of the follicular hormone for two weeks. If there was no improvement, the treatment was discontinued as a failure. If there was relief of symptoms, treatment was suspended to be resumed upon the beginning return of symptoms. The second series was usually for only one week in

the same dosage. Subsequent treatments were given if necessary.

A. Natural Menopause:

Case Number	Age of Patient	Interval since Menopause	Total* Dosage in r.u.	Relief of Symptoms	Return of Menstruation	Return of Symptoms after Two Weeks' Therapy	Period of Observation
1	53	2 Yrs.	1400	++++	—	—	3 Mo.
2**	47	17 Yrs.	2800	—	—		6 Mo.
3	46	7 Mo.	4200	++++	—	+	3 Mo.
4	47	6 Mo.	2800	++++	—	+	3 Mo.
5	43	2 Yrs.	1200S ***	—	—		6 Mo.
6	46	6 Mo.	1400	++++	—	—	2 Mo.
7	42	3 Mo.	1400	+++	—		1 Mo.
8	45	5 Mo.	2500	++++	—	+	2 Mo.
9	47	5 Mo.	600	++++	—		6 Wks.
10	50	1 Yr.	1400	++++	—		1 Mo.
11	40	2 Yrs.	2100	++++	—	+	2 Mo.

*Follicular hormone was used in all cases.
**This patient was subsequently diagnosed involutional psychosis and referred to a psychiatrist for treatment.
***S—Vaginal suppositories.

B. Artificial Menopause:

Case No.	Age of Patient	Operation Causing Menopause	Duration of Menopause	*Total Dosage in r. u.	Relief of Symptoms	Return of Menstruation	Return of Symptoms after Two Weeks' Therapy	Period of Observation
12	24	H, S-O	9 mo.	2800	++++	—	+	4 mo.
13	30	Radium	2½yrs.	1400	++	—		1½mo.
14	29	S-O	11 yrs.	1400	++++	—	—	2 mo.
15	44	Radium	3 yrs.	1400	++++	—	—	2 mo.
16	45	H, S-O	6 mo.	1400S	++++	—	—	3 mo.
17	20	S-O	2 mo.	4200	++++	—	+	4 mo.
18	29	H, S-O	2 yrs.	1400S	++++	—	—	3 mo.
19	38	H, S-O	1 mo.	700S	++++	—	+	4 mo.
20	26	S-O	6 mo.	2800	++++	—	+	2 mo.
21	28	S-O	9 yrs.	1400	++++	—		1 mo.
22**	22	S-O	16 days	2800	++++	+		1½mo.
23	38	H, S-O	10 yrs.	1400	++++	—		2 mo.

Symbols: S—vaginal suppositories.
H—supravaginal hysterectomy.
S-O—bilateral salpingo—oophorectomy.
*—follicular hormone used in all cases.
**Menstruation 10/13—10/18; bilateral S-O 10/24/31; Theelin 200 r. u. daily 11/10—11/20; uterine bleeding 11/23—11/27; no further hormone therapy; uterine bleeding 12/5—12/10.

Discussion: It would seem logical to expect extremely satisfactory results from the follicular hormone in these cases. Of the twenty-three patients treated, nineteen received excellent relief of subjective symptoms. Of the remaining four, one received good relief, one moderate and two no relief. One of the patients who received no relief was subsequently proven to have a neurologic etiology of her symptoms.

It is interesting to note that in only one instance did bleeding follow treatment. Here it is quite reasonable to assume that the ovarian tissue was not completely removed at operation. We have been unable, therefore, to duplicate the work of Zondek and Aschheim, who reported the establishment of two menstrual cycles in a patient castrated two years previously. We can assume that either our dosage is too small or that the hormone which we have used is incapable of inducing uterine bleeding in this type of patient.

Another striking observation is that in only six of the fourteen patients in whom observations as to the permanency of treatment for two weeks could be made, there was no return of symptoms. Eight patients required subsequent treatments to obtain relief of recurring symptoms.

We are well aware of the pitfalls of clinical observations in symptomatic relief. We have employed no controls. We have tried to evaluate our results as accurately as possible. We are in full accord with Pratt's[5] statement that "subjective symptoms should be excluded as criteria for judging effects of ovarian hormone therapy."

II. Amenorrhea:

Both primary and secondary amenorrheas were treated. Where possible the endocrinopathy is given.

Treatments included the use of the follicular hormone, the anterior pituitary luteinizing hormone and thyroid extract. The scheme of administration of the follicular or the anterior pituitary luteinizing hormones has been that of daily injections of 100 r.u. for two weeks, followed by a rest interval of two weeks. If menstruation did not ensue, this regime was repeated until menstruation occurred or until it was deemed useless to continue. The choice of hormones has been difficult in certain instances as well as uncertain. It can only be said that in patients who showed genital hypoplasia the follicular hormone was usually employed; in those showing evidences of hypo-

function of the anterior pituitary, the luteinizing hormone was used. Often both were administered. Where there was a definite lowering of the basal metabolic rate, thyroid extract was also used; its use is noted in each instance. No attempt is made in these instances to attribute results obtained to the follicular or luteinizing hormones. No other forms of therapy have been employed except the institution of rational diet in obese patients.

A. Primary Amenorrhea:

Case No.	Age of Patient	Endocrinopathy	Treatment R. U.	Menstruation Initiated	Subsequent Menstruation Regular	Period of Observation
24	16	Eunuchoid	FH 7000	+		
			APLH 1400	(Fol. 5 series)	—	9 mo.
25	15	Eunuchoid	FH S 1400	+	+	6 mo.
26	23	Adiposo-genital	APLH 2800	+ (Fol. 1 series)	+	9 mo.
27	18	Infantile	APLH 1400	+	+	3 mo.
28	18	Acromegaloid Eunuchoid	FH 2800 APLH 2800	—		3 mo.
29	20	Masculine	FH 2800 Thy.	+ (Fol. 1 series)	+	4 mo.
30	18*	Eunuchoid	FH S 2100	—	—	3 mo.
31	17	Eunuchoid	FH 2800	—	—	2 mo.
32	19	Pluriglandular	FH 1400 APLH 1400	—	—	3 mo.

*Patient had epilepsy; treatments discontinued when attacks were aggravated.

Symbols: FH—follicular hormone.
APLH—anterior pituitary luteinizing hormone.
S—vaginal suppositories.
Thy.—thyroid extract.

Discussion: Of the twenty-six patients with either primary or secondary amenorrhea, eighteen menstruated following treatment and in eight menstruation did not occur. Of the eight in whom menstruation did not follow treatment, two had incomplete treatment, another became pregnant and two others required discontinuation of treatments due to aggravation of attacks of epilepsy in one instance and of major hysteria in the other.

Of the fifteen patients whose follow-up records have been adequate enough to allow conclusions being drawn as to the permanency

B. Secondary Amenorrhea:

Case No.	Age of Patient	Endocrinopathy	Interval Since Last Menstruation	Treatment R. U.	Menstruation Returned	Subsequent Menstruation Regular	Period of Observation
33	21	Pluriglandular	4 mo.	APLH 5600	+		
				Thy.	(Fol. 1 series)	+	8 mo.
34	24	?	12 mo.	APLH 2800	+		
					(Fol. 1 series)	—	5 mo.
35	21	Eunuchoid	5 mo.	FH 1400	+		1½mo.
36	23	Adiposo-genital; obesity	7 mo.	APLH 4200	+		
				Thy.	(Fol. 1 series)	No	6 mo.
37	29	Adiposo-genital; obesity	2 mo.	APLH 5600	+		
				FH2800 Thy.	(Fol. 1 series)	No	6 mo.
38	16	Eunuchoid	2 wks. Previously 3 mo.	FH 7000	+		
					(Fol. 1 series)	+	9 mo.
39*	17	?	6 mo.	FH 1400			
				APLH 700	—	—	4 mo.
40	27	Pluriglandular	1 mo. Previously 3 mo.	APLH 1400	+		
				FH 1400	(Fol. 1 series)	—	4 mo.
41	20	?	1½mo.	FH 2800	+ (Fol. 1 series)	+	3 mo.
42	20	Pluriglandular	5 mo.	FH 4200 Thy.	+ (Fol. 1 series)	No	3 mo.
43	19	?	4 mo.	APLH 1400	+		1 mo.
44	20	Pluriglandular	6 mo.	FH 2800 APLH 1400	+	No	4 mo.
45	21	Eunuchoid	4 mo.	APLH 1400	+		1 mo.
46	18	Acromegaloid	5 mo.	APLH 2800	+	+	3 mo.
47	17	Adiposo-genital; obesity	3 yrs.	APLH 1400	—		2 mo.
48	31	Adiposo-genital; obesity	2 mo.	APLH 1400	—		2 mo.
49**	23	Adiposo-genital; obesity	1½mo.	APLH 2800	—	No	4 mo.

*Patient's attacks of hysteria were aggravated and treatment was discontinued.

**Patient had an intercurrent pregnancy.

Symbols: FH—follicular hormone.
APLH—anterior pituitary luteinizing hormone.
Thy.—thyroid extract.

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of improvement, eight experienced regular menstruation subsequent to treatment, three continued to menstruate but irregularly and four experienced no subsequent menstruation. Since two of the eight patients whose subsequent menstrual cycles were regular received thyroid extract, in only six of these patients the results can be attributed to the follicular or luteinizing hormones.

Our experience with five patients who presented a clinical picture of obesity of the adiposo-genital type has been particularly unsatisfactory. Three of these patients failed to menstruate following treatment with the luteinizing hormone. The two patients, in whom menstruation occurred following treatment. had no subsequent menstruation, and in these two thyroid extract had been combined with the luteinizing hormone in treatment.

It is quite difficult to evaluate the two hormones from the above tables. In the eighteen patients in whom menstruation followed treatment. six were treated with the follicular hormone, nine were treated with the luteinizing hormone and three were treated with a combination of the two. Since thyroid extract was used in addition in five of these patients, we can consider only 13 of these patients as showing results attributable to either the follicular or luteinizing hormones. Of the eight patients, in whom menstruation did not result following treatment, the follicular hormone was used in two, the luteinizing hormone in three and a combination of the two in three. Of the eight patients, in whom subsequent menstruation was regular, three received the follicular hormone, three received the luteinizing hormone, one received the follicular hormone and thyroid extract and one received the luteinizing hormone and thyroid extract. Of the seven patients in whom subsequent menstruation was irregular or did not occur. two received the follicular hormone, one received the luteinizing hormone and three received a combination of the two.

It would seem logical to infer from the positive results obtained with the luteinizing hormone that it is capable of stimulating the ovaries to function adequately for menstruation. It is impossible to explain why once menstruation has resulted from treatment it cannot be maintained regularly even with a continuation of the same treatment. The occurrence of pregnancy in a patient receiving the luteinizing hormone would seem to indicate that there is no inhibition of ovulation by this dosage.

III. Oligo- and Hypomenorrhea:

Into this group are placed forty-six patients in whom there were irregularities of the menstrual interval, scantiness of menstrual flow or both. All of these patients presented symptoms associated with the abnormality of menstruation. They came to us for relief of these symptoms. These patients are grouped according to the character of the outstanding symptoms into five groups: premenopausal, vasomotor, dysmenorrhea, headaches, and neurologic.

Both the follicular hormone and the luteinizing hormone have been used singly or in combination. In the premenopausal patients the follicular hormone was used. The daily dosage of these two hormones has been 100 r.u. for two weeks with rest intervals of two weeks. This regime was repeated until discontinuance was advisable either due to relief or to failure. The follicular hormone has been administered during the intermenstrual phase. The luteinizing hormone has been administered during the late premenstrual and menstrual phase, the administration beginning about one week before menstruation and continuing throughout the duration of the flow.

Discussion: Of the forty-six patients with scantiness of flow or irregularities of the menstrual interval, twenty-seven showed excellent regulation of the menstrual irregularity fol-

A. PREMENOPAUSAL:

Case No.	Age of Patient	Duration of Symptoms	Total Dosage* R. U.	Relief of Symptoms	Regulation of Menstruation	Period of Observation
50**	47	6 mo.	4200	+++	++++	6 mo.
51	46	1 yr.	8000	++++	+++	8 mo.
52	39	1 yr.	1400	++	—	1 mo.
53***	41	9 yrs.	2800	—	—	3 mo.
54	35	6 mo.	1200	++++	—	1 mo.
55	37	1 yr.	1400	++	—	1 mo.
56	39	4 mo.	1200S****	++++	++++	2 mo.

*Follicular hormone used solely.
**Treatment discontinued when patient began to have attacks of major hysteria.
***Patient's symptoms later proved to have a neurologic basis.
****S—vaginal suppositories.

lowing treatment, five showed good regulation and fourteen showed no change in the menstrual condition.

The relief of symptoms associated with these menstrual irregularities is best considered under group symptoms. Of the seven patients whose symptoms were of the premenopausal type, three experienced complete relief, one good relief, two moderate relief and one no relief. In all of these patients the follicular hormone was used.

B. Vasomotor:

Case No.	Age of Patient	Additional Symptoms	Treatment Dosage R. U.	Relief of Symptoms	Regulation of Menstruation	Period of Observation
57	29		APLH 4200	+++	—	4 mo.
58	30	dysmenorrhea	APLH 1400 FH 1400	—	—	2 mo.
59	26	dysmenorrhea	FH 4200	++++	++++	4 mo.
60	24	dysmenorrhea	FH 1400	++++	++++	2 mo.
61	23	frigidity*	FH 4200	++++	++++	3 mo.
62	26		FH 700S	++++	++++	1 mo.
63	30		APLH 4200	++++	++++	4 mo.
64	28		FH 2800	+++	++++	2 mo.
65	23		FH 1400	+++	++++	3 mo.
66	30		FH 2800	+++	++++	3 mo.

*No relief of this symptom.
Symbols: APLH—anterior pituitary luteinizing hormone.
FH—follicular hormone.
S—vaginal suppositories.

C. Dysmenorrhea:

Case No.	Age of Patient	Treatment Dosage R. U.	Relief of Symptoms	Regulation of Menstruation	Period of Observation
67*	20	FH 4200	—	++++	8 mo.
68	20	FH 1400	++++	++++	2 mo.
69	21	FH 1400	++++	++++	2 mo.
70	15	FH 2800	++++	++++	5 mo.
71**	22	FH 5600	++	++++	5 mo.
72	27	FH 7000	++++	++++	6 mo.
73	20	APLH 1400	+++	++++	2 mo.

*This patient had a 3rd degree retroversion of uterus.
**A menstrual urticaria was completely relieved.
Symbols: FH—follicular hormone.
APLH—anterior pituitary luteinizing hormone.

D. Headache:

Case No.	Age of Patient	Special Symptoms	Treatment Dosage R. U.	Relief of Symptoms	Regulation of Menstruation	Period of Observation
74	29	Menstrual headaches	APLH 4200	++++	+++	4 mo.
75	29	Menstrual headaches; Meningismus	FH 1400 APLH 5600	++++	++++	9 mo.
76	24	Premenstrual headaches	ALPH 1400	++++	++++	2 mo.
77	30	Menstrual headaches; Dysmenorrhea	FH 4200 APLH 1400	Headaches — Dysmen- ++++	++++	6 mo.
78	40	Menstrual headaches	APLH 2800	++++	++++	4 mo.
79	40	Menstrual headaches	APLH 1400	++++	++++	3 mo.
80	24	Headaches	FH 1400	++++	+++	1½mo.

Symbols: FH—follicular hormone.
APLH—anterior pituitary luteinizing hormone.

Of the ten patients whose symptoms were primarily of vaso-motor origin, five received excellent relief, four good relief and one no relief. The follicular hormone was used in seven, the luteinizing hormone in two and in the patient in whom no relief was obtained both hormones were used.

There were seven patients who complained primarily of dysmenorrhea and six other patients in whom dysmenorrhea was one of the major symptoms. Of these thirteen patients, nine received excellent relief, one received good relief, one moderate relief and two no relief. One of the patients in whom a negative result was obtained had a third degree retroversion of the uterus. The follicular hormone was used in twelve of these patients and the luteinizing hormone in one. Both patients who received negative results had been administered the follicular hormone.

There were seven patients who complained primarily of headaches. In all of these patients the headaches were thought to be quite definitely related to the menstrual cycle. Six of these patients received complete relief and one no relief. The follicular hormone was used in one patient, the luteinizing hormone in five

patients and in the one patient who did not experience relief, both the follicular and the luteinizing hormones were used.

There were fifteen patients treated whose primary complaints were of the neuro-psychic type. The majority of these patients were referred to us from psychiatric or neurological services. Since the symptoms of these patients were associated with abnormal menstruation, we were anxious to observe the effect of hormone injections. In five of these patients excellent relief of symptoms was experienced; in two the relief was moderate; in eight there was no relief. In those in whom excellent relief was obtained, the follicular hormone was used in four; the luteinizing hormone was employed in one. In those in whom moderate relief was obtained, the follicular hormone was used. In those in whom no relief was obtained, five received the follicular hormone and three were given the luteinizing hormone.

It is interesting to note that in three of the patients with oligomenorrhea, frigidity was among the symptoms complained of. This symptom was relieved in none of these patients. The follicular hormone was used in all instances.

The relationship between the improvement of the menstrual irregularities and the relief of symptoms is important. Of the twenty-four patients who received excellent relief of symptoms, nineteen experienced complete regulation of menstruation; four experienced good regulation; and one showed no change in menstruation. Of the six patients who experienced good relief of symptoms, five had complete regulation of menstruation; one experienced no change. Of the five patients who experienced moderate relief of symptoms, one had complete regulation of flow; one received good regulation; and three experienced no change. Of the eleven patients who received no relief of symptoms, two had a complete regulation of flow and in nine no change was observed.

In regard to the return of symptoms following cessation of treatment, definite conclusions cannot be drawn in the majority of instances due to the rather short period of observation in most patients. However, return of symptoms was noted in cases 78, 79 and 80. There are no other instances of return of symptoms where relief was obtained by treatment during the period of observation of each patient.

E. NEUROLOGIC:

Case No.	Age of Patient	Special Symptoms	Treatment Dosage R. U.	Relief of Symptoms	Regulation of Menstruation	Period of Observation
81	14	Melancholia; Hysteria	APLH 1400	++++	++++	4 mo.
82	27	Hysteria associated with menstruation	FH 1400	++	—	1 mo.
83	29	Hysteria & disorientation associated with menstruation	FH 2800	++	+++	3 mo.
84	23	Vomiting & diarrhea associated with sexual excitement	FH 1400	++++	++++	1 mo.
85*	28	Obesity; atonia; G-I upsets	APLH 800	—	—	1 mo.
86	36	Asthenia; V-M instability	FH 2800	++++	+++	2 mo.
87	33	Melancholia; dysmenorrhea	FH 1400	++++	++++	2 mo.
88	32	Dyspareunia; dysmenorrhea	FH 2800	++++	++++	4 mo.
89	24	Melancholia; frigidity	FH 1400	—	—	3 mo.
90**	22	Epilepsy; masturbation	APLH 1400	—	—	1 mo.
91***	14	Schizophrenia	APLH 4200	—	++++	4 mo.
92	29	Melancholia	FH 1400	—	—	1 mo.
93***	32	Disorientation; frigidity	FH 1400	—	—	1 mo.
94****	30	Melancholia; Dyspareunia	FH 1400	—	—	1 mo.
95	27	Hyperesthesia; melancholia	FH 1400	—	—	1 mo.

*Treatment discontinued due to severe systemic reactions.

**Treatment discontinued because of exaggeration of epileptic attacks.

***Committed to psychopathic hospital.

****Treatment discontinued due to exaggeration of symptoms.

Symbols: FH—follicular hormone.
APLH—anterior pituitary luteinizing hormone.

IV.—Hypermenorrhea:

Under this heading are grouped eighteen patients who either experienced excessive flow at the time of menstruation (menorrhagia) or had uterine hemorrhage not related to the normal menstrual flow (metrorrhagia). All of these patients. except three whose bleeding

was definitely of an inflammatory character, were endocrinopathic.

Both the follicular and the luteinizing hormones were used. In menorrhagia the system of administration was somewhat different than that in metrorrhagia. In the first condition the follicular hormone when used was given 100 r.u. daily for two weeks during the intermenstrual phase in the hope of lessening the subsequent excessive menstrual flow. Where the luteinizing hormone was employed it was given in doses of 100 r.u. daily for two weeks, beginning injections five to seven days before the expected excessive period and these were continued throughout the duration of the period. In metrorrhagia the follicular and the luteinizing hormones were administered in daily doses of 100 r.u. for varying periods of time in attempts to check the uterine bleeding.

A. Endocrinopathic Menorrhagia:

Case No.	Age of Patient	Duration	Additional Symptoms	Treatment Dosage R. U.	Regulation of Menorrhagia	Relief of Additional Symptoms	Period of Observation
96	20	2 mo.		APLH 1400	++++		2 mo.
97	30	5 yrs.	Vasomotor	APLH 1400	++++	++++	2 mo.
98*	21	6 mo.	Dysmenorrhea	APLH 1400 FH 1400	++++	—	4 mo.
99	20	1 yr.	Dysmenorrhea	APLH 1400	++++	++++	3 mo.
100	30	3 yrs.	Dysmenorrhea	APLH 4200	—	—	4 mo.
101	23	6 mo.		FH 1400	—		2 mo.
102	26	2 yrs.	Dysmenorrhea	FH 2800	—	—	4 mo.

*This patient has an acute anteflexion of the uterus.
Symbols: APLH—anterior pituitary luteinizing hormone.
FH—follicular hormone.

Discussion: Our results in the treatment of menorrhagia and metrorrhagia have not been excellent and do not allow any very general conclusions being drawn. Of the seven patients with endocrinopathic menorrhagia who were treated, four received excellent regulation of excessive menstruation and three received no result. The four patients who received regulation were treated with the luteinizing hormone. Of the three patients in whom negative results were obtained two were treated with the follicular hormone and one with the luteinizing hormone.

An interesting observation might be made cerning four of these patients who complained of dysmenorrhea associated with excessive menstruation. Only one of these patients received relief of this symptom. This patient was treated with the luteinizing hormone. Of the three patients who received no relief, one received luteinizing hormone, one was given the follicular hormone and one received both. The latter patient, however, had an acutely anteflexed uterus.

With the patients who showed endocrinopathic metrorrhagia our results were distinctly poor. Of the seven patients treated in this class, only two experienced a control of the

B. Endocrinopathic Metrorrhagia:

Case No.	Age of Patient	Treatment Dosage R. U.	Control of Metrorrhagia	Subsequent Menstruation Normal	Period of Observation
103*	20	FH 1400	—		1 mo.
104*	20	FH 2800	—		2 mo.
105**	19	FH 1400	—	+	6 mo.
106**	22	FH 1400	—	+	6 mo.
107	21	FH 1400	++++	+	3 mo.
108***	23	APLH 800	—		1 mo.
109****	22	APLH 1400	++++	+	4 mo.

*Radium necessary to control bleeding.
**D. & C.; parathormone and calcium lactate controlled bleeding.
***D. & C. necessary.
****Patient complained of mid-menstrual spotting for 4-5 days each month.
Symbols: FH—follicular hormone.
APLH—anterior pituitary luteinizing hormone.

C. Inflammatory Metrorrhagia:

Case No.	Age of Patient	Treatment Dosage R. U.	Control of Metrorrhagia	Subsequent Menstruation Normal	Period of Observation
110	35	APLH 1400	++++	+	2 mo.
111	31	APLH 1400	—		1 mo.
112	22	APLH 1400	—		1 mo.

APLH—anterior pituitary luteinizing hormone.

metrorrhagia. One of these patients received the follicular hormone and one received the luteinizing hormone. Of the five patients who received negative results, four received the follicular hormone and one the luteinizing hormone.

Of the three patients with inflammatory metrorrhagia who were treated primarily as controls, one received a satisfactory control of the menorrhagia, the other two received no benefit. All three were treated with the luteinizing hormone.

Our patients of this type have unfortunately been too few. It has been striking as well as disappointing that we have not seen more of these patients with endocrinopathic hypermenorrhea during this study. We believe with Novak[6] that the luteinizing hormone is effective in these patients. We cannot be impressed with any effectiveness of the follicular hormone in these patients.

V. Miscellaneous:

Into this class are placed eight patients with various symptoms which are not related to definite disorders of menstruation.

Case No.	History	Treatment	Subsequent Record
113 114 115 116	Patients with hyperemesis complicating 3-4 month pregnancies. They had all failed to respond to the usual treatment of this condition	Follicular hormone 200 R. U. daily for 3-4 days.	Cessation of vomiting on third or fourth day in all. One patient returned in three weeks with an incomplete abortion.

Case No.	Age of Patient	History	Treatments	Result
117	60	Patient with senile vaginitis and pruritus.	Follicular hormone 100 R. U. daily for one week. F. H. suppositories, two daily for one week.	No relief
118	47	Patient with senile vaginitis and pruritus.	Follicular hormone 100 R. U. daily for two weeks.	No relief
119	39	Primipara, seven months pregnant who demonstrated marked asthenia, low B. P. and V-M instability.	APLH 100 R. U. q. 2 d. for two months.	Symptomatic relief; rise of 20 m. m. in B. P.; delivery at term.
120	58	Menopause 12 years previous. Complaint of melancholia.	APLH two series of 1400 R. U.	Symptomatic relief.

Discussion: The cases are detailed primarily for completeness; no conclusions are drawn nor any explanations offered.

Comments

Reactions: Individual reactions to these hormones have been very interesting. There have been no severe reactions from the preparation of the follicular hormone we have used. A good number of patients, however, have complained of pain during and immediately following the injection. This has been sufficiently severe in several patients to cause them to discontinue treatment. We are told[3] that this is due to the presence of .1 per cent sodium hydroxide, which is necessary to render the Theelin crystals soluble. There have been no general nor systemic reactions.

Reactions have been more frequent and of a more severe grade with the anterior pituitary luteinizing hormone. They have been, however, primarily of a local character. These are to be attributed, we believe, to the rather high percentage of solids and not to any particular protein fractions. Patients have exhibited quite sore arms in several instances following treatments. There has been associated often a local erythema. The reaction has been sufficiently severe occasionally to cause the patient to discontinue treatment. Several of the patients have shown slight elevations in temperature following injections. There has been only one patient who manifested quite severe general reactions. This patient after each of six injections of 200 r.u. developed severe occipital headache, vomiting and temperature of 100° F. Treatment was discontinued.

Aggravation of Neuro-psychiatric Symptoms: This was observed in five patients and treatments were suspended. In cases 18 and 90, epileptic attacks came with greater frequency and severity following treatment. In cases 39, 50 and 94, hysteria was aggravated to assume a major form characterized by convulsions.

Character of Menstruation Following Administration of Hormones: We have noticed uniform failure of menstruation to return following treatments in patients with natural or artificial menopause. When bleeding has followed treatments in patients with primary and secondary amenorrhea, it has been often irreg-

ular and infrequent. The term "menstruation" is applied in these cases with considerable uncertainty, for we cannot infer that a normal menstruation and this type of uterine bleeding are synonymous. There are four patients reported whose treatment was followed rather promptly by bleeding but who, in spite of continuation of the same treatment, failed to have subsequent menstruations.

It is difficult to believe that this type of bleeding is menstruation; in two of these patients we are inclined to assume with Novak[7] a vicarious role of the anterior pituitary with a failure of normal ovarian stimulation. It would seem reasonable to assume normal menstruation in those patients experiencing regular rhythmic uterine bleeding following treatment and continuing after discontinuation of treatment.

Value of Correlation of Clinical, Surgical and Pathological Studies: An attempt to evaluate carefully the effects of these hormones on the tissues of the human female as well as to determine the character of bleeding following their use is very necessary. An effort should be made to obtain studies of the ovaries of patients who have been receiving the luteinizing hormone; a study of these ovaries in relation to the time of administration of the hormones, the phase of the menstrual cycle during its administration and the microscopic and gross changes in the ovaries should prove of value. Dosage of the hormone may be varied and an attempt to recover ova by the method of Pratt[8] may be combined. Study of curettings taken also at the time of operation may be correlated. We are attempting such studies at present. Results are too incomplete at this time to report. We are planning, also, to study the character of uterine bleeding resulting in patients with amenorrhea subsequent to treatments with these hormones. These studies are to comprise microscopic examination of the menstrual blood as well as of the uterine curettings.

We wish to express our appreciation to Dr. E. A. Sharp for his cooperation in making these hormones available to us in such generous quantities.

Summary

(1). The results of treating 120 patients with the follicular (Theelin) and anterior pituitary luteinizing hormones (Antuitrin-S) are analyzed. The route of administration has been intramuscular except in a few instances where the follicular hormone was given by vaginal suppositories. Thyroid extract was used in addition in five patients; the results in these patients are not attributed to the follicular or luteinizing hormones.

(2). The follicular hormone was used in the treatments of twenty-three patients with natural or artificial menopause. Bleeding recurred in only one instance. This patient evidently had ovarian tissue left at the time of operation. Relief of subjective symptoms was excellent in nineteen patients. We are inclined to believe, however, that the relief of subjective symptoms, regardless of how grateful it is to the patient, should not be used as an evaluation of hormonal action.

(3). A total of twenty-six patients with primary and secondary amenorrhea were treated. Uterine bleeding followed treatment in eighteen patients; of these, however, only eight exprienced continued rhythmic uterine bleeding, interpreted as being normal menstruation. Two of these patients had received thyroid extract. Our records show little difference in the effectiveness of the two hormones. Using the production and maintenance of regular uterine bleeding as a criterion, we are not impressed with the specificity of either hormone, when used in the dosage we have employed.

(4). Of the forty-six patients with oligo- and hypomenorrhea, twenty-seven obtained excellent regulation of menstruation, five good regulation and fourteen experienced no effect. Relief of associated symptoms and regulation of the menstrual irregularity were definitely related in our experience. Of the twenty-seven patients experiencing excellent regulation of the menstrual disorder, eighteen experienced excellent relief of subjective symptoms, five good relief, one moderate relief and three no relief. Of the fourteen patients in whom the menstrual condition was not improved, one experienced excellent relief of subjective symptoms, three good relief, nine no relief. It is difficult to evaluate the two hormones from such a series. Of the twenty-seven patients receiving excellent regulation of menstruation, twenty received the follicular hormone and seven the luteinizing hormone. Of the fourteen patients in whom menstruation was not regulated, nine received the follicular hormone and five the luteinizing hormone.

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(5). The effect of these hormones upon special symptoms associated with oligo- and hypomenorrhea is interesting. Three patients who complained of frigidity received no relief. Of thirteen patients who complained of dysmenorrhea, nine received excellent relief, one good relief, one moderate relief, and two no relief. Of seven patients who complained of menstrual headaches, six received excellent relief; in three of these patients the relief was only temporary.

(6). Our experience with eighteen patients with hypermenorrhea does not warrant any worthwhile inferences being made. The follicular hormone has not proved of value. The luteinizing hormone has yielded satisfactory results in some instances.

(7). We report eight patients with miscellaneous symptoms. No conclusions are drawn.

(8). Reactions to the follicular hormone have not been severe. The luteinizing hormone has caused more severe local reactions and in one instance moderate general reaction.

(9). Aggravation of epilepsy in two patients and of hysteria in two others has occurred.

(10). There should be a close correlation between clinical, surgical and histo-pathological studies of the effects of these hormones. Particular attention should be paid to the ovarian responses to these hormones and to studies of the endometrium and menstrual blood following their administration.

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POSTURE IN RELATION TO MEDICINE.

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It is only fitting that we begin by defining posture. The Subcommittee on Orthopedics and Body Mechanics of the recent White House Conference stated that posture or body mechanics is the mechanical correlation of the various systems of the body with special reference to the skeletal, muscular, neurological and visceral systems. It should be emphasized that this correlation should be essentially a dynamic and not simply a static one. A typical picture would be that of the athlete who runs easily without loss of motion, or that of the dancer whose every movement spells rhythm and grace. We believe too that the keystone of this mechanical correlation is the will to correlate properly.

It is believed that the present biped posture of man has been evolved from quadruped posture. Armitage Whitman has said that "One of man's hardest battles is the battle against the force of gravity." This biped or upright posture is maintained only at the expense of active, more or less constant muscular effort. It is evident that the body has not fully adapted itself to the biped posture. However, it is only by having the hands free for other labors of art and science and for the finer adjustments of life that we have made progress. Our proud position at the head of the animal kingdom is due largely, of course, to our upright posture. So we feel that we are compensated in spite of its disadvantages.

So, our general problem is that of bringing into proper action the antigravity muscles so that the body may be erect, the vital organs function correctly and that there may not be an unnecessary expenditure of energy.

Goldthwaite has well said that in the upright position the poise or attitude in which there is the least strain, and therefore which is the correct attitude, is that with the body held so that it is made as tall as possible without raising onto the toes. The head is erect, the shoulders back, the chest high, the abdomen flat, the physiological curves of the spine are not exaggerated, the knees are straight and the body weight evenly distributed on the feet. Roughly speaking, a plumb line laterally should pass through the external ear, the shoulder, hip, knee and ankle joints. In other words, the muscles should hold the skeleton in balance.

We know that all of us are not built alike. Three types of build have been outlined. First, there is the stout, the heavy, herbiverous type; second, there is the light, slender, lank, carnivorous type; third, there is an intermediate or neutral type. Heredity plays a large part in determining the type of build that we have. This cannot be changed by environment, and certain diseases seem to be associated in general with types of build. The heavy type seem to suffer particularly from arteriosclerosis, gout, diabetes, chronic kidney and gall-bladder diseases and hypertrophic arthritis. The slender type seems prone to tuberculosis, infections in general, intestinal disorders and atrophic arthritis.

Now, rather dogmatically to be sure, so called posture standards have been set up. Lloyd Brown, of Boston, in adults, and Armin Klein, of Boston, in children, have evolved what they considered to be fairly satisfactory standards through the examination of a large number of cases. Four grades, A, B, C, D, are designated according to the degree of proper balance which the subject attains. I do not feel that these standards should be rigidly adhered to but they do serve as useful guides to classification of groups.

The question arises why some individuals have Grade A or excellent posture and others have Grade D or poor posture. The question of relationship of fatigue to poor posture has been a moot one. Some argue that fatigue causes poor posture, while others insist that poor posture results in fatigue. This discussion bears the same fruit as that of the premier origin of the hen or the egg. All that can be said definitely is that there is a relationship between the two and that the two must be given conjoint attention.

Next, what part does malnutrition play in relationship to poor posture? Klein and Leah Thomas have made some interesting observations in their two-year survey of 1,708 school children in the Chelsea, Mass., schools. In this survey, 961 of the children were in the trained or posture group, and 747 were untrained in posture. Improvement of poor nutrition was much more marked in the group that received posture training than in the group which did not receive posture training. The corollary was also true. It was amongst the children whose nutrition improved most that the greatest improvement in posture took place. However, posture training of itself insured a definite advance in posture irrespective of the state of nutrition.

A boy of ten years of age who has been given posture training at the Posture Clinic at the Medical College of Virginia Dispensary, improved in posture from Grade D to Grade B in six months. However, owing to home conditions, there was a gain of only one-half pound in weight during this period.

Then there was a boy seven years of age, whose posture was poor and who was undernourished, who was seen at the office. Postural exercises were prescribed and performed regularly. At the end of six months his posture had been improved from Grade D to Grade B and this boy had gained six pounds in weight.

In addition to fatigue and malnutrition, whose causal relationship may be open to question, there are other more definite causes of poor posture. Amongst these may be mentioned conditions, such as eye strain, chronic debilitating diseases, such as tuberculosis, and disturbances of metabolism, such as rickets.

Poor posture is often the result of bad habits. A slouchy standing posture was at one time popular, especially with girls. Sitting constantly on the end of the spine rather than on the buttocks, which is the correct position, is a common factor. Sitting in improperly made chairs is detrimental to good posture. Someone has wisely said that poor posture began when chairs were invented. Sleeping in soft, sagging beds is a bad influence. Other habits leading to poor posture are almost too numerous to mention.

We frequently meet certain conditions as a result of standing posture and more especially poor standing posture. The head may be too far forward and the muscles of the back of the neck strained. The shoulders may be rounded, straining the muscles about the scapula. The chest may be flattened, so that lung aeration is decreased and the work of the heart increased. The abdominal wall may be protuberant and flabby, resulting in a dropping of the abdominal organs and interference with their circulation. The pelvic inclination may be increased and the pelvic viscera further congested. The lumbar curve may be increased. Increased strain is then placed on the muscles and ligaments of the whole lower extremity, owing to the unnatural position assumed.

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Furthermore, the relaxed, ungraceful, inefficient position of the body may have an influence on the mental make-up of the individual and lead to carelessness and inefficiency there also.

Talbot and Brown have shown that, in children with poor posture, visceroptosis is almost constantly a corollary. This results in a sluggish peristalsis and constipation. They report cases in which obstinate constipation was cured entirely by postural position and exercises.

A case of cyclic vomiting was referred from the Pediatric Service of the Medical College Dispensary. The child had been given the ordinary medical treatment. There had been some improvement. However, improvement became more marked after six weeks of postural training.

The picture of the child with infectious arthritis, known as Still's disease, and who has bowel disturbances—either constipation or diarrhea—and who has a wretched posture, is too well known to require discussion.

Also, the frequent relationship between Orthostatic Albuminuria and poor posture is well known, and Schloder and Weith found that 20% of the individuals examined by them showed albuminuria as a result of placing the individuals into different postures.

In adults we find often similar conditions exaggerated.

Stoll reports a case of a girl, twenty-five years old, who complained of constant pain about the heart. After other medical remedies had failed, it was found that her standing posture was poor and that she had been working at a table which was too low for her. When she was given a higher table her pain soon disappeared.

Tuberculous individuals are notorious for their poor posture. Manifestly, tuberculosis cannot be attributed to poor posture. However, it is difficult to see how a flat chest and shallow breathing could help one to ward off this disease.

The relationship between visceroptosis and posture has been mentioned previously. Wheatley and Moore examined eighty-four girls in the Boston School for Physical Education with this in view. These girls were examined at the beginning of the year and at the end of the first and second years. Roentgenograms of the viscera were taken and the posture examined. These girls were given systematic postural exercises. Their conclusions were that girls with good posture usually had no visceroptosis, and, further, that systematic physical training will bring about a coincident improvement in posture and visceroptosis.

Swanson studied 250 cases of pregnancy with regard to posture. He found what he called the lumbar index, which is obtained by making first a vertical line from the most prominent point of the dorsal spine to the most prominent point of the sacral spine and then making a horizontal line from the deepest point of the lumbar curve to this vertical line. It was normally between 30 and 40 cm. In pregnancy it averaged 49½ cm. The pelvic inclination was about ten points higher. His conclusion was that the length of labor increased with a higher pelvic inclination. Also he found a relationship between poor posture and various pelvic symptoms. He found also that all pregnant women have a tendency to develop poor posture following delivery and that they should be given a series of exercises.

Norman Miller made a study of dysmenorrhea and posture in 785 young college women. His conclusions were, although it was not justifiable to say that faulty posture and poor muscle tone caused dysmenorrhea, that a reduction in menstrual pain occurred, however, along with improvement in posture and poor muscle tone, as a result of directed physical exercise.

It is evident that mechanically the most obvious results of poor posture are in ligamentous and muscular strain. These lead to pain and aches of all descriptions. For example, a head carried too far forward results in strain on the neck muscles. This gives rise frequently to headaches. The pull on the shoulder muscles from round shoulders often gives rise to chronic strains and bursal inflammation. A female medical student was seen who complained of a constant pain just medial to the left scapula. She had had osteopathic treatments for years with temporary relief. She was given postural exercises and after three months her symptoms disappeared entirely.

Functional curvature of the spine, or scoliosis, results from poor posture. In these cases the left shoulder is usually higher; the curve is always a single curve, and there are no compensatory curves and no bone changes. If the posture be corrected these curves disappear.

If nothing be done, these curves become permanent and organic.

Someone has said that a woman was a constipated biped with a pain in her back. This is too often true. And usually those suffering from a pain in the back have a greatly exaggerated curve or lordosis.

Then there is the chronic foot strain, which is one of the results of poor posture. It is well recognized in the treatment of arthritis that the posture cannot be neglected. In the atrophic cases the posture in general is often at fault and should be helped if possible. And in the hypertrophic cases every effort should be made to eliminate strain on the affected joints.

I do not believe that poor posture results necessarily in trouble to the individual. I do feel, however, that here we have a potentiality of trouble which should not be ignored. I believe that I have said enough to emphasize one point, namely, that we cannot afford to neglect to examine the patient lying and standing when possible, in order to find out what is the individual's posture.

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Professional Building.

DISEASES OF THE UPPER RESPIRATORY TRACT IN CHILDREN.*

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In this symposium it is our purpose to consider only infections of the upper respiratory tract which are covered by the term "common cold." Hence, such specific infections as diphtheria, Vincent's angina, follicular tonsillitis, etc., are purposely omitted.

From December to April in this climate the average physician spends most of his time in the treatment of the various types of respiratory infections and their complications. They come in recurrent waves of ofttimes epidemic proportions, and vary in intensity from a mild coryza with no constitutional symptoms to a terrific infection of the entire respiratory tract with severe and dangerous systemic involvement. They cause more loss of time from work and school than any other type of disease, and hence their prevention and treatment should be one of the most important problems that confronts scientific medicine today.

While no age is exempt, those most susceptible and chiefly affected are school children between the ages of four and seven years. The morbidity is so high among these children that over 50 per cent are reported absent from the kindergarten and lower classes during certain seasonal epidemics. Indeed, it would seem an advantageous procedure if the two lower classes of school could be closed from January to May and kept open during the summer months when the incidence of sickness is comparatively low. And certainly a more strict health department supervision should be established over these cases. It seems absurd that the harmless cases of chicken-pox, German measles, et cetera, are excluded from school for weeks while the infections which with their complications and sequelae cause more permanent crippling than all the other children's diseases combined should be allowed to run rampant. A regulation which would quarantine a child at the first sign of a "snuffle" would do much to stamp out this paradoxical condition.

The work of Long, Dochez, and others has

*Read before the District of Columbia Medical Society, April 22, 1932.

shown rather conclusively that the common cold is due primarily to a filtrable virus, to date microscopically invisible. This virus not only may produce the coryza itself but is capable of stimulating to greater activity other pathogenic organisms present in the nasal passages, and it is the growth of these organisms which cause most of the prolonged effects and complications—often worse than the cold itself.

Briefly, these infections can be conveniently discussed under three headings: (1) Acute Rhinopharyngitis; (2) Subacute Rhinopharyngitis; (3) Acute Pharyngeal Infections.

Acute rhinopharyngitis quite commonly occurs in infants and young children as a result of sudden changes in temperature, living in over-heated apartments, and exposure to direct infection from some member of the household. There is, at first, a constant serous and later a muco-purulent nasal and post-nasal discharge, little or no fever, irritability, restlessness in sleep, loss of appetite and disturbances of digestion, especially in young infants. Older children may complain of chilliness and fullness in the head. A cough, more pronounced when lying down, is frequent and is due to the post-nasal discharge. More severe types frequently appear to start as an adenoiditis or uvulitis, or in the naso-pharynx and rapidly spread forward and downward. Adenoiditis frequently is the cause of an unexplained sudden high fever in a child.

While rhinopharyngitis is usually mild and self-limited to one or two weeks, it should be promptly treated to prevent complications and spreading to the lower respiratory tract. In the order of their importance, I would emphasize the following treatment measures: First, bed rest. The grandmother to the contrary notwithstanding, a child can be made to stay in bed, or at least kept from running around the house, up and down stairs, to the cold front porch and back to the hot kitchen, subjecting his mucous membranes to frequent changes of temperature, exhausting his energy, and spreading his own mucous indiscriminately hither and yon. He should be kept in a room of even temperature, well ventilated but emphatically not too cold. Fresh air does not have to be cold air.

Second, local applications to the nares to establish normal drainage and comfortable breathing, especially in the nursing infant. Plain liquid petrolatum, unmedicated, may be instilled into the nostrils at frequent intervals, or a few drops of normal salt solution containing 20 minims of adrenalin chloride to the ounce. More recently a one-half per cent solution of ephedrine in oil or ephedrine in the form of a nasal jelly has given excellent results, and its administration has been attended with less violent resistance on the part of the young patient. The promiscuous use of so-called germicidal preparations in the acute nasal conditions, especially by the laity, should be condemned. As yet there is no evidence to show that their use in any strength and dosage does not do more harm than good. Over-treatment must be avoided. It is unwise and unnecessary to instill more than two or three drops, at the most, of any solution into the child's nose. More than that is usually swallowed and may cause vomiting and digestive symptoms. I have seen prescriptions reading, "ten drops in nostrils every four hours."

And, third, a light nourishing diet, a mild laxative and the judicious use of acetylsalicylic acid for fever and restlessness will hasten recovery. In older children the old-time tried and efficient Dover's powder has still a place.

Subacute Rhinopharyngitis

Under this heading are included the cases of persistent or recurrent nasal and post-nasal discharge frequently accompanied by harassing cough and chronically inflamed pharynx, due to the constant post-nasal droppings. There may be more or less involvement of the accessory sinuses, especially the antra. They frequently are subject to lymphoid hyperplasia, and early removal of adenoids and tonsils may be necessary to effect a cure. Even after the operation, there is a tendency to formation of tiny islands of lymphoid tissue in the naso-pharynx which may easily become the seat of infection. The general condition of these children is below par, they tire easily, appetite is poor, they may be pale with dark shadows under the eyes and the breath is foul. A subacute bronchitis is a frequent sequela. Occasionally they run a low P. M. fever and are prone to develop tuberculosis. In fact, it is common to find suspicious mediastinal glands appearing in X-ray pictures of the chest. They apparently catch one cold on top of another during the winter months. There is generally found some older member of the family or a servant who has chronic catarrh or sinusitis, and it is

obvious that these individuals are carriers of the infection, especially if their personal hygiene is not of the best. The slightest exacerbation of their own catarrh produces a corresponding flare-up in the child.

The treatment of these cases must be painstaking and persistent. Local measures, such as shrinkage of the nasal mucosa, irrigation and drainage of the sinuses when involved, are absolutely necessary, and here the cooperation of a competent rhinologist is essential to a successful outcome. Removal of excess lymphoid tissue is indicated even if necessary to repeat the operation several times.

Hygienic treatment is important. Here again these children should not be required to sleep in a cold room or forced to take cold baths and other radical measures "to harden them up." They should be protected from other members of the family who may be "carriers," and susceptible young children should not be left in the care of a nurse unless she is free of catarrhal conditions. How often do we see a nurse-maid or even a parent use her own soiled handkerchief on the nose of the child.

Iron tonics are of benefit when secondary anemia is present, as it often is. But more important still is the dietary management. Food rich in vitamin A should be pushed to the limits of digestion. It is a noticeable fact that individuals, especially children, who crave fats and eat considerable fat meats and food rich in fats are peculiarly resistant to respiratory infections and are able to throw them off quickly when infected. Egg yolk, milk, butter and fat meats, supplemented by liberal quantities of cod liver oil, should be encouraged. Sun baths when feasible without chilling or the use of a good ultra-violet lamp are of considerable value. In chronic cases, those financially able will effect a permanent cure much more rapidly by spending a winter or two in a warm dry climate. Often a stay of even two or three weeks will clear up a stubborn sinus cold in a young child where months of strenuous treatment have proved unavailing. Vaccine treatment will be taken up in a later paragraph.

Acute Pharyngeal or Throat Infections

These include infections of the pharynx and usually neighboring structure, such as tonsils and uvula and may spread to the nose and lower respiratory tract. In fact, most respiratory infections start as a simple pharyngitis or uvulitis. They are perhaps the most frequent of children's diseases, and are variously designated "grippe," "acute pharyngitis" or, when in epidemic form, called "influenza." The symptoms vary in intensity from a mild reddening of the pharynx and fauces, with a slight fever and nervous symptoms lasting one or two days, to an intense inflammation, spreading to the entire respiratory tract with such severe constitutional symptoms and frequently dangerous complications that a fatal outcome cannot be avoided. When of this type, it is frequently found that the offending bacterium in cultures taken from the infected parts is one of the more virulent forms of streptococci, especially the hemolytic strain, which undoubtedly has been stimulated into violent activity by the "cold virus." Otitis, mastoiditis, meningitis, pan-sinusitis, retro-pharyngeal and cervical gland abscesses, and the pneumonias, are frequent complications of such an infection.

In a typical case the onset is usually very sudden, with vomiting, irritability, sudden high fever, chill in older children, prostration and pains in the back and limbs. Infants will frequently cry out from the soreness and evident pain caused by handling. Nasal discharge and cough may not be present for several days or at all if the disease is arrested. Usually, however, they become prominent symptoms as the inflammation spreads. A child will seldom complain of sore throat even though it may be present. Blood findings are not significant except in severe cases, when a leucopenia may be found. The vomiting in young children is frequently almost uncontrollable and out of all proportion to the apparent mildness of physical signs. In some epidemics the vomiting is so pronounced and seems to spread to other members of the family so easily that it has been suggested as a definite clinical entity, aptly named "epidemic winter vomiting." The term "intestinal grippe" does not seem sufficiently descriptive for this type of case. Whether the incessant vomiting is due to toxemia or is a gastritis produced by swallowing infected mucous from the naso-pharynx is as yet undetermined.

The treatment may be divided into abortive and symptomatic. If a case is seen within the first twenty-four hours and the uvula or pharynx found to be injected, careful swabbing with 3 per cent nitrate of silver will frequently arrest the attack. Whenever possible

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it is better to use daylight or reflected sunlight in examining the throat of an infant or child as the artificial lights in common use may give a false impression of the redness present. Here also the indiscriminate and reckless swabbing of a child's throat with germicidals of doubtful value by the physician or parent should be discouraged, especially if the symptoms have already spread beyond the pharynx, as little but harm can result. This, of course, does not apply to cases of follicular tonsillitis or membranous forms of angina which are not included in the scope of this paper.

The symptomatic treatment is the usual measures for the relief of pain, fever and cough, and local applications, as mentioned under acute rhinopharyngitis. The control of incessant vomiting may call for bismuth by mouth, cracked ice, and a mustard paste or ice-bag to the pit of the stomach. Fluids should be pushed but given in very small quantities at frequent intervals to prevent vomiting. In severe cases it may be necessary to give fluids by rectum or subcutaneously in order to avert an acidosis which is frequently a dangerous complication of these respiratory infections in children. Here, again, I would stress the importance of keeping these children in confinement not only for forty-eight hours after the temperature becomes normal, but until the respiratory symptoms have completely subsided. Relapses and delayed complications may be very frequent otherwise.

Vaccines have not as yet established themselves as a specific cure, though some report fair results from their use. As a prophylactic, however, against respiratory infections, they have given such uniformly good results when properly administered that their more frequent use should certainly be encouraged. We have used them in a sufficient number of cases during the past two winters to convince us that they have a distinct value, especially in that type described under subacute rhinopharyngitis where the child, or the whole family of children, suffers from recurrent colds once or twice a month during the winter. A stock mixed vaccine is used containing given numbers of killed bacteria representative of those found in the respiratory passages of all individuals subject to frequent respiratory infections. Beginning about the middle of November four injections are given three days apart. The initial dose should be one-half c.c. and increased by one-quarter c.c. at a time up to one and one-half c.c. depending somewhat upon the reaction. Young children stand rather heavy doses very well and a severe reaction is rare. These four injections protect the child for well onto a month when he begins to lose his immunity. Therefore, once a month during the winter and early spring he is given one injection of three-fourths to one c.c. of the vaccine. This keeps his immunity at its peak during the epidemic season. The cases under our care, even if they caught a cold, have shown such resistance as hardly to warrant any treatment, a far different picture from that they presented the winters before we undertook its use. While, of course, these vaccines are not specific, inasmuch as the cold virus itself has not been isolated, we do know that the bad results of the infection are produced by the accessory bacteria, and it is these prolonged effects and complications that we hope to prevent with our vaccines. Unsatisfactory results are usually due to insufficient initial dosage and failure to repeat it at regular intervals during the winter season.

3725 *Jenifer Street.*

WHAT MAY BE EXPECTED FROM ADEQUATE INSTITUTIONAL CARE AND TREATMENT OF PSYCHOTIC CHILDREN.*

HUGH C. HENRY, M. D., Petersburg, Va.
Superintendent Central State Hospital.

The subject assigned me, I take it, refers to the institutional care and treatment of children (persons of 18 and under) who are the subjects of mental disease or mental defectiveness.

DEPENDENT, DEFECTIVE AND PSYCHOTIC CHILDREN: I think it is now conceded by all authorities that *dependent children* of average or normal mentality should be cared for in institutions only as a last resort and where the home is impossible or a proper foster home and foster parents cannot be secured. In other words that a poor home with normal relationship of parent and child is better than a rich institution with the best artificial substitute for that relationship.

For the child of *defective mentality* the question of institutional care versus home care must be determined by a study of such major con-

*One of a group of papers read before the Virginia Conference on Childhood and Youth, held in Richmond, November 23-24, 1931.

siderations as the degree of defectiveness, the personality of the child, the personality and the mental and material equipment of the parents, the possible ill effects upon other children of the home as well as other considerations in indiviual cases.

As such a large number of things are to be considered and weighed carefully, it is impossible in the time at my disposal to compare with any degree of satisfaction the advantages or supposed advantages of institutional care such as the protection of the child from vicious companions, the instruction by trained teachers, etc., with the love and affection of parents and other attributes of a normal home; nor would I presume to discuss the care and treatment of the feeble-minded before an audience made up largely of specialists and practical workers along this particular line.

Therefore, I have delimited the scope of my remarks and what I shall say refers solely to the child who is the *subject of a psychosis*, to the child who is suffering from a mental disease if you please.

Importance of Institutional Care for the Psychotic Child: Lest there be any question in your minds, let me say that no such considerations as I have mentioned in connection with the dependent child of normal mind, or the child of defective mentality, are entitled to the dignity of determining factors in deciding the question of institutional care and treatment of the child suffering from a psychosis or mental disease.

The early diagnosis and the prompt hospitalization of these cases frequently spells the difference between cure or restoration of the patient and the permanency of the disease.

"The periods of life (says Dr. White) at which a latent tendency to mental disorder may crop out are the physiological epochs—puberty, adolescence, puerperium, the climacteric and the senium, and mental disease at these epochs, except the senium, indicate serious deficiency in capacity for biological adjustment." One of the most important of these periods is that of puberty and it is at this period that most careful observation is indicated in such cases as have an inherited predisposition or as show symptoms suggestive of possible mental disturbance.

The problem is to have a sufficient understanding of character to be able to pick out those types liable to develop psychoses and protect them from that class of stresses that they are least able to withstand.

There is need for considerable research along this line, for our knowledge is here far from complete, and all but insurmountable difficulties present themselves to us. A complete life history of the adult population in our hospitals for the insane would, I am convinced from recent studies, show that in over 50 per cent the psychosis had its beginning in a temperamentally abnormal make-up, or maladjustment discernible in childhood. Unfortunately what the institutions get is too often the "end product."

The most encouraging effort now being put forward is the work which our Bureau of Mental Hygiene of the Department of Public Welfare is doing in trying to detect abnormal mental trends in childhood and youth.

The child of dull intellect, the one with patent peculiarities, the shy and seclusive, should be and now frequently is brought under the observation of a competent psychiatrist, but it is the young person of brilliant, perhaps precociously brilliant faculties, the pride of the parents and friends, who may be most in need of protection.

Comparative Results of Institutional Care in Children and Adults: As showing what results may be expected from institutional care and treatment, a study of the following table covering and comparing with other ages all cases under 19 (excepting the feeble-minded) admitted to the Central State Hospital, during the past seven years, is enlightening.

Ten per cent of the insane persons admitted were under 19 years of age.

The ratio of total discharges to total admissions was 35 per cent.

The ratio of insane persons discharged to insane persons admitted was 36 per cent.

The ratio of insane persons (under 19) discharged to insane persons (under 19) admitted was 52 per cent.

Nearly 13 per cent of all discharges were of insane persons under 19 years of age.

It seems, therefore, we may expect a recovery rate among these young classes of 52 per cent as against 36 per cent among those above 19. Recovery is, of course, a relative term, but for practical purposes we may consider those recovered who are able to leave the institution and make a satisfactory adjustment at home or in an environment on the outside adapted to their condition, or in other words when they cease to become a social and economic liability.

Need for Separate Institutions for Psychotic Children: These results of treat-

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DATE	Total 1st Admission All Classes	Feeble-minded Admitted	Insane Admitted	Insane Under 19 Admitted	Total Discharged	F. M. and Not Insane Discharged	Insane Discharged	Insane Under 19 Discharged
1924–25	455	47	408	53	105	7	98	25
1925–26	491	37	454	47	116	5	111	22
1926–27	474	31	443	39	178	9	169	25
1927–28	502	31	471	48	248	5	243	24
1928–29	526	72	454	44	222	14	208	26
1929–30	557	79	478	37	192	22	170	18
1930–31	569	81	488	42	201	27	174	22
	3,574	378	3,196	310	1,262	89	1,173	162

From the tabulation above the following totals and percentages may be noted:

Total 1st admissions (all classes), 7 years.....3,574.
Feeble-minded admitted, 7 years.....378.
Insane persons admitted, 7 years.....3,196.
Insane persons under 19 years of age admitted, 7 years.....310.
Total discharged (all classes), 7 years.....1,262.
Feeble-minded and not insane discharged, 7 years.....89.
Insane persons discharged, 7 years.....1,173.
Insane persons under 19 years of age discharged, 7 years.....162.

ment which I have just mentioned have been obtained with us under the most adverse condition for, because of the congested state of the hospital, we are forced to treat and care for many of these children in the same wards with older patients. No children's wards are at present available except those for the feeble-minded.

Because the majority of the patients of our state hospitals for the insane are adults, the care and treatment is largely in the direction most suited to adults. The peculiar needs of children are often overlooked. They are overshadowed by the larger number of adults. The thoughts and activities of the physicians, nurses and the attendants are all along adult lines and the needs of the occasional child are not uppermost as they should be, and he is simply one of the general population. Too often are we surprised to find the child included by a careless attendant in a company of adult workers performing tasks and in company totally unsuited to his welfare.

Often is the child who has peculiar behavior exploited by ignorant employees to "do his stunt," be it preaching, exhorting, mimicking others, or what not. From my experience of over twenty years, I might enumerate at length the disadvantages to be found in mixing the psychotic child with the psychotic adult, the deteriorated, the epileptic and, even I may say, with the feeble-minded.

What I have said applies to my own institution but it is equally applicable to a large extent to the other institutions for the insane of our state.

Therefore, I would earnestly stress the need of a separate institution for the care of the psychotic child, rather than a ward or department in the existing institutions which are now taxed to the limit to care for the other classes, particularly the senile, the burden of whose support the localities have found out how to shift to the state.

My reason for this, as has been hinted, is that adequate hospital care for children with psychoses, or in danger of developing psychoses, presupposes a rather highly specialized department of psychiatry, particularly a personnel of physicians, nurses, attendants and administrators trained along this special line.

Pending the establishing of such an institution where not only the definitely psychotic child could be treated but where incipient cases could be studied by trained experts, a separate department in existing institutions might be set apart for this class, with its own dining hall, school room, occupational and recreational room, and a personnel temperamentally adapted to such work and with at least some special training.

Given at least this, I am satisfied from the results which we have observed in our own institution, under the most adverse conditions, that the percentage of recoveries will show a decided increase and will be most gratifying.

In concluding, let me say again that delay in seeking adequate institutional care all too often means the establishment of permanent abnormal mental habits. The idea of hospitalization stigmatizing the patient is happily

growing less and less as people are better informed and are taught to look upon hospitalization as an effort towards cure rather than as a kind of jail to seclude them from society. It is often more of a stigma for the insane child to remain at home where his abnormal behavior is evident to all and sundry.

The environment of the home and the solicitude and sympathy of parents constitute still a problem which must be met by the patient, intelligent, sympathetic physician.

My message in a word is to urge that every effort be made towards an early diagnosis of mental disease in children and that proper hospitalization be effected as promptly as possible, after which, in the light of experience, we have every reason to "thank God and take courage."

THE MENTAL HYGIENE PROBLEM OF THE SUPERIOR CHILD.*

BEVERLY R. TUCKER, M. D., Richmond, Va.

Professor of Nervous and Mental Diseases, Medical College of Virginia.

There is a differentiation to be made between the superior child or youth and the mentally superior child or youth. The first embraces the whole individual character, personality and mind, and the second deals only with the intelligence. In either instance the youth in many respects, or in one respect, is super-average and, if the word average is synonymous with normal, then in both instances the child or adolescent is abnormal. On the other hand, in either instance he may be considered especially endowed. A child or youth may be superior in only one subject, music, art, English, mathematics or whatever it might be. It would be better, I believe, after the three R's are attained not to have standardized graded classes for these young people, but to let them go up in those subjects in which they showed special aptitude and stay average or even go back in those subjects with which they had difficulty. At any rate, it needs especial attention.

In comparison to the superior child, far too much attention has been given the inferior or sub-normal child. It is not, in my opinion, going too far to say that every youth of superior intellect, whether superior in character and personality or not, should be carefully examined, and, if necessary, psychologically and medically guided. The brilliant child is just as much in need of mental hygiene as is the stupid child. It is as much a problem for a student to be a grade or two advanced as it is for it to be a grade or two behind.

But how are we to separate the superior pupil from an average or inferior one? Surely not by class gradings. By no means is it true that the upper ten in a class, let us say of fifty, are superior. An inquiry into their attainments in after life will convince us of the truth of this assertion. Surely not by examinations. A child with a photostatic memory may cram for these examinations and know practically nothing of the subjects either before or after the examinations. Surely not by the various intelligence tests. These are mostly mere tests of alertness, mental agility and of superficial mentality, not of brain power or of deep thinking ability. Several years ago we tested the freshmen at the Medical College of Virginia and compared these findings with the students' record in college three years after and the correlation was only 30 per cent.

There are definite disease conditions that may make a child bright or apparently bright. The stimulation of the slight temperature of tuberculosis, the increased metabolism of moderate over-secretion of the thyroid gland, the transitory increase of pituitary gland secretion, the exhiliration of mild mania and the body chemistry changes of early dementia praecox may speed up the mental reactions, increase the child's class marks and give it all the appearances of mental brightness. One of my patients, a child who had been considered among the dullest in his school, had an attack of encephalitis (inflammation of the brain) and afterwards became to be considered one of the brightest children in the school. He rounded up in a reformatory.

I am always apprehensive over the "upper ten," more so, perhaps, than over the lower ten in any class. The mentally superior pupil creates a problem for himself. His associates, because of his advanced intelligence or class standing, are usually among those who are older, with whom he cannot compete in physical age and, hence, in games, social functions, sex knowledge and many activities; therefore, he is apt to be teased and imposed upon, or is not included whole-heartedly in the group, and, losing the free associations of childhood and youth, he may become indifferent, seclusive or conceited, or he may attach himself to the apron strings or to the coat tails of a parent

*One of a group of papers read before the Virginia Conference on Childhood and Youth, held in Richmond November 23-24, 1931.

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or of some other older person. More than this, he may, and often does, develop emotional disturbance, sensitiveness, suspiciousness, prejudices, fears, undesirable habits, bad conduct traits and some of the various complexes we hear so much of these enlightened days. Then there may, and usually does, follow that train of physical complaints—headaches, fatigue, eye strain, anemia, indigestion, constipation, flushings or chilly sensations and nutritional disturbance for the correction of which the drug manufacturer and the special-food exploiter are breaking their necks in competition. The chief difficulty is that neither of them correct these youngsters and the mental hospitals or the grave yards gather many of them during early adult life.

The whole subject needs deeper and far more extensive consideration than can possibly be given it in this brief paper. It must be determined whether a child or adolescent is apparently or really superior, whether the potentialities of superiority are permanent or transitory, whether the superiority is or is not having a deleterious effect in whole or in part, whether the brilliant but peculiar youth may not be a candidate for insanity, whether infectious or other disease is playing a role, whether the youth it not becoming socially and environmentally maladjusted, whether the child or adolescent is injured by being bragged about and exploited and many other whethers.

Superior mental ability at any age is rare, but pseudo-superior ability, to whatever it may be due, is more or less frequent. In any event, whether pseudo or real, cognizance should be taken of the mental status of the individual.

Important, too, beyond words, is the protection of the really endowed child or youth so that its gifts in the bud may so unfold that a perfect flower will result. Superior endowment is rare. It has been said that there is only one eminent man to each two hundred thousand of a civilized population and only one illustrious man to each two million. It is easy thus to see that many face cards of the schools and colleges get lost in the shuffle and fail to show up in the deal of adult life.

212 *West Franklin Street.*

Choices have to be made. The important thing is to realize that we cannot choose once and for all. Outside forces are constantly changing the stage upon which we have to play our respective roles.—*Selected.*

FOOD AND FOOD HABITS OF THE PRE-SCHOOL CHILD.*

J. M. BISHOP, M. D., Roanoke, Va.

The problems associated with food and food habits of pre-school age begin during infancy. The physical, mental, and moral health, and even happiness and success, in life are largely influenced by events, nutrition, and habits acquired during this extremely important, plastic, pre-school period. The importance of supervision during infancy is fairly well realized, and the care, supervision and immunization of the school child receives considerable attention. Pre-school examinations of large groups have shown as high as 90 per cent defects or abnormalities, which indicates sad neglect prior to this time. The problems arising during this stage of development have received comparatively little study, and are poorly understood, yet they warrant the attention of all agencies.

Physicians are not properly qualified, or do not devote sufficient time and thought to the problems of food, nutrition, and management of the run-about child to offer competent advice and impress the parents with the value of professional supervision. Handing out form printed diet lists according to the age of the child does not solve the problem. To properly study the problems of each child, and offer suggestions and advice requires considerably more time than a visit for a simple illness.

Nutrition is an index to the general condition. Malnutrition is not a disease, but does indicate that something is wrong. The diagnosis should be made only after a thorough physical examination. The height-weight-age tables are valuable, but must be properly interpreted. To keep the weight within the normal limits is a prophylactic as well as a curative measure.

The food element requirements differ slightly in proportions, but mainly in digestive adaptability at various ages. The protein requirements are higher during rapid growth. The caloric requirements vary with each individual, but are approximately 45 per pound (100 per kilo) each twenty-four hours at the end of one year, and decrease to 36 per pound (80 per kilo) at six years. About 35 per cent of the

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intake should be supplied by fat, 15 per cent by protein and 50 per cent by carbohydrate.

Fat is supplied mainly by milk, butter, eggs, and meat. Fat has a high energy value, serves to control salt balance in the body, and most animal fats contain the fat soluble vitamins that are necessary for proper development and resistance to infections.

Protein is supplied by milk, eggs, meat, vegetables, and some cereals. Protein is necessary for cell growth, to replace lost body proteins, and may replace carbohydrate to some extent.

Carbohydrate is furnished by a large variety of foods, including fruits, vegetables, and grain products. Carbohydrate is easily digested, serves as the chief source of energy, is necessary for proper fat oxidation, and also serves as a protein sparer.

Mineral salts are necessary for life and growth and are furnished by milk, vegetables, fruits, and whole grain products.

The value of pigment has recently been stressed.

A high fluid intake is essential as a larger percentage of the body weight at this age is made up of water.

The public is over-educated in regard to vitamins by commercial exploitation. The average older child taking a properly balanced diet receives sufficient vitamins. The foods richest in vitamins are—milk, butter, eggs, fruits, vegetables and whole grain products.

The so-called "American diet" of white bread, meat and potatoes is deficient in many respects. Milk is rightfully classed as an ideal food, but has been over-stressed. The universal "quart of milk a day" slogan has left the impression that as long as this goal is reached, the question of nutrition is solved. Many children take excessive amounts of milk to the exclusion of other foods, and as a result are poorly developed, anemic, and demonstrate the usual "malnutrition or fatigue" posture, with large abdomen, even though the amount of subcutaneous fat appears to be normal. The use of sweetened condensed milk, except for short periods, deserves wide condemnation. It is an unbalanced food, and its use prevents proper development and invariably results in a poor eater.

Considerations for proper feeding: (1) Begin adding foods other than milk by the sixth month. The present tendency is to begin feeding earlier. Besides furnishing additional food elements, the child becomes accustomed to a variety of tastes and thus eliminates one of the later feeding problems. (2) Begin with starches and gradually introduce fruits and vegetables. (3) Prepare foods so as to conserve the vitamin and mineral content. Vegetables requiring cooking should be cooked in little or no water and the latter served with the vegetables. (4) Gradual addition of animal proteins. (5) Regulation of the amounts of milk, fats, and intense sweets. Frequently excessive amounts of butter, cream and sugar are added to the diet with the idea of increasing the caloric intake. The result is opposite from that desired, due to a decreased appetite and a lessened total food intake. (6) Give water freely. (7) Serve a light easily digested meal late in the day. (8) Serve three to four meals the second year, and then three meals with additional nourishment in certain cases. (9) No food between meals, and certainly not within two and a half to three hours of the following meal. This is probably the most common offense. Often parents, worried because their child is under weight and has a poor appetite, will give food between meals, usually some intense sweet, because the child will eat then, but is never hungry at meal time. (10) Exclusion of undesirable foods. Fried greasy foods, pastries, intense sweets, stimulants as tea, coffee, coco-cola, rich and highly seasoned foods, should not be allowed, or in any case reduced to a minimum.

Food problems are more habit problems than a lack of proper foods. The well child not eating is apparently a modern problem. The appetite is a sensitive indicator of the body's needs, but it is easily influenced. A child refuses food due to illness and is often manifest before other signs. Excitement, fatigue, or eating shortly before meal time may affect eating for that particular meal. Eating one food to the exclusion of others, or taking an improperly balanced diet, or undesirable foods should be mentioned; however, the important factors are faulty training and psychological reactions. The example of the parents is often reflected in the eating of the child, and applies to amounts and likes and dislikes. Emotional strain at meal time is a common occurrence, and results in an unpleasant period with little food consumed by the parents and children. The child of highly nervous, neurotic parents is usually a poor eater. Meal time is frequently

a period of special attention for the child. One refusal of food results in begging, bribes, petting and promises, and any time later the child has some wish, or feels neglected this is repeated with the desired results. Feeding the young is a maternal instinct, and the mother decides that the child must eat. The resulting nagging stimulates perversity, and creates a true negativism. The child's exaggerated sense of importance with a desire for attention, fostered by over-zealous and over-solicitous parents may be considered the keynote of the trouble. Many children much prefer punishment to being ignored.

General considerations for prevention and overcoming faulty food habits and poor appetites, in addition to those mentioned under proper feeding are, (1) The example of the parents. (2) Teach that all wholesome foods are to eat. (3) Form correct hygenic habits. (4) Regular meal time. (5) Serve wholesome foods in small portions to prevent discouragement by the sight of a large helping. (6) Avoid undue emotion and fatigue, especially near meal time. (7) No comment regarding dislikes and poor eating. An apparent Spartan indifference is much to be desired to an evident anxiety. (8) Meal time should be a pleasure period—free from excitement, and unpleasant discussions, with absolutely no nagging, threats, punishment, bribes or petting. (9) Encourage the child to eat alone and disregard an occasional accident and table manners. The latter will be acquired by imitation.

The importance of pre-school examinations should continue to be stressed, but should start five years instead of five months before school entrance. Proper periodic supervision is not an expense, but results in actual financial savings, besides frequently preventing suffering, anxiety, and regret.

The present mothers should be taught practical food requirements and management of her child, not from advertising propaganda, but by physicians, medical, health and welfare organizations. Future mothers should receive instruction while in high school, college or university.

Let us as physicians become more familiar with these problems which range from dietetics to psychology, and strive to remove the designations, neglected and poorly understood, as applied to the extremely important period between infancy and school age.

511 *Medical Arts Building.*

PHENOBARBITAL AND BELLADONNA IN THE TREATMENT OF HYPEREMESIS GRAVIDARUM.

HOWARD F. KANE, M. D., F. A. C. S., Washington, D. C.

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That there is no entirely satisfactory method of treating hyperemesis gravidarum is proved by the multiplicity of procedures. Until more is learned of the cause of this condition, treatment will continue to be based on empiricism, experiment or pure speculation as to its etiology. Disregarding the type of vomiting believed to be caused by reflex irritation from pelvic pathology, no tenable theory has been advanced which will account for the group of symptoms which characterize heperemesis. It seems probable that the cause may be found in endocrine dysfunction, but Hirst's theory of corpus luteum deficiency, logical though it may be, is not supported by therapeutic results. Thyroid and ovarian extract have also failed to be of marked value. At the present time, the most successful methods of treatment are frankly symptomatic. Though the cause is not known, there are certain facts, almost universally accepted, regarding the pathology, and in attempting to counteract these deviations from the normal, it is frequently possible to control the hyperemesis.

Of the various groups of symptoms to be treated, there are, first, those of toxemia due to the central degeneration of the lobules of the liver. As the disease progresses, starvation adds its toxins to those already present. Nervous and mental derangements are practically always present. In fact, the classical division of hyperemesis is into three types: reflex, neurotic and toxemic. The tendency at present is to recognize that the last two are so closely related that a better classification is reflex and neuro-toxemic.

The fact that degeneration of the liver impairs its glycogenic function has led to the incorporation into practically every method of treatment the supplying of carbohydrates to the system.

The tissues of the entire body become dehydrated, and the necessity for supplying fluid is universally recognized.

It is in the matter of quieting the nervous system that the wide variety of procedures has been developed. Practically every sedative drug in the pharmacopoeia has been used in the attempt to allay the irritation of the nerves

and the irritability of the stomach. To this list of sedatives, the writer has the temerity to add a combination of two drugs, each only rarely employed, and not mentioned in the literature in combination.

One of the most widely used sedatives is veronal. Its beneficial effects are fully recognized, but its usefulness is rather limited by the fact that frequently a dose sufficient to effect relaxation will cause delirium. Five years ago, after several distressing experiences with veronal, the writer began to substitute phenobarbital, which drug, in addition to being a sedative, is said to act on the vomiting center. At first it was given by mouth to ambulatory patients whose nausea was not sufficiently active to prevent oral medication.

A tablet of 1½ grains was given three times a day. When this dosage caused excessive drowsiness, the amount was gradually lessened. While this procedure did not immediately cure every case, it seemed to give relief to a greater degree than had any other drug. When luminal-sodium became available for hypodermic administration, its use was extended to those cases in which nausea and vomiting prevented the patient from taking any medicine by mouth. This proved to be a much more satisfactory mode of treatment. It was found that from one to three injections daily of 2 grains of luminal-sodium would cause the patient to sleep or at least to be very drowsy practically all of the time. After two or three days of almost constant sleep, the dose was gradually decreased so that by the end of a week the drug could be discontinued. In most instances, by this time, the patients were only slightly nauseated, if at all, and could retain food.

Owing to the difficulty of giving frequent injections to patients in their homes, this procedure is practically limited to hospital cases. While hospitalization is always desirable for hyperemesis patients and is absolutely necessary in all severe cases, it is at times highly inconvenient or impossible.

To accommodate certain patients whose symptoms were moderately severe but who felt that only extreme necessity would justify their entering a hospital, a rectal suppository containing 3 grains of phenobarbital was compounded. It was found that one suppository three times daily would produce practically the same effect as two hypodermic injections of luminal-sodium. The simplicity and effectiveness of this form of medication led to its adoption as a routine.

Frequently the character of the vomiting is suggestive of pylorospasm. This led to the addition of ½ grain of extract of belladonna to the 3 grain luminal suppository. This combination of phenobarbital and belladonna has proved to be more effective than any other drug or drugs previously employed.

Simple sedation of the patient, of course, is not sufficient treatment for hyperemesis. Certain adjuvant procedures are absolutely necessary. Perhaps a brief outline of the treatment of three types of hyperemesis, classified according to severity, will be of value.

In the mild form, the patient is nauseated only at certain periods of the day, usually in the morning on arising or late in the afternoon. One or two paroxysms of vomiting may occur, but in many cases the discomfort is limited to a constant sensation of nausea. The first indication for treatment is based on the fact that "the empty stomach is the sick stomach." The morning attack of nausea is probably due to the preceding 10 or 12 hour fast.

The patient is instructed to place beside her bed, within easy reach, two crisp soda crackers. In the morning, immediately on awakening, she munches the crackers slowly and lies flat on her back for 10 minutes before arising. Breakfast should be eaten as soon as possible and preferably should not be prepared by the patient, as the handling and smelling of cooking food frequently provoke vomiting. During the day, lest the stomach become empty, some food should be taken every hour, by the clock. The character and amount of the food may be left to the wishes of the patient, but due to the decrease in sugar formation by the liver, carbohydrate foods are to be preferred.

A 1½ grain phenobarbital tablet should be taken at 10:00 A. M., 4:00 P. M., and at bedtime. Should this dosage cause drowsiness, it may be gradually diminished by cutting one or more of the tablets in half, usually taking the whole tablet at bedtime.

In most cases this treatment will give marked relief, but must be continued until nature has established metabolic equilibrium.

In case the nausea is constant and vomiting occurs several times during the day with rejection of all food, the patient must be put to bed. A suppository containing 3 grains of phenobarbital and ½ grain of extract of bella-

donna is given three or sometimes four times a day. For the first twenty-four hours, absolutely nothing is given by mouth. This procedure gives the stomach a complete rest and also has some psychic value. At the end of the fast the patient is usually so hungry and thirsty that she will make every effort to retain food. Nourishment should be given every hour, solid food being the first offered to the patient, as fluids are more likely to be vomited. The diet should be largely carbohydrate, and after feeding has been started fluids should be given to the limit of tolerance. If the patient is sleeping soundly, it is perhaps better to awaken her for food only every two hours. Should she express a wish for any article of food, no matter what, it should be procured for her, as food that is desired is more easily retained.

After two or three days of sleep, the daily number of suppositories should be reduced to two, then to one, and in seven or eight days should no longer be necessary. During this period of treatment the patient should be isolated, as completely as is possible. Visitors should be strictly prohibited, as discussion, either sympathetic or pessimistic, tends to aggravate the symptoms.

Should the patient fail to improve under the treatment just outlined, hospitalization is imperative. A private room is absolutely necessary as the presence of other patients in a ward is more harmful than the occasional visitors in the home.

In these cases, a twenty-four hour period of fasting begins the treatment. Three or four phenobarbital and belladonna suppositories are given daily. A retention enema of six ounces of a 5 per cent solution of glucose is given every four hours, in order to supply both sugar and fluid. This is best given about one hour after the suppository has been inserted.

If, after the end of the first twenty-four hours, solid food is not retained, the fast is continued for another day. Five hundred c.c. of a 10 per cent solution of glucose are given intravenously twice daily until food and fluids are taken by mouth in sufficient quantity.

Certain cases of hyperemesis gravidarum will not respond to any form of palliative treatment and the life of the patient may sometimes be saved only by the interruption of pregnancy. The change from a condition which may be treated successfully by palliative measures to one in which the life of the patient may be saved only by therapeutic abortion is frequently so insidious as to require the nicest judgment on the part of the obstetrician. In general, it may be said that a continued pulse-rate of 120 or over, fever and jaundice, are strong indications for emptying the uterus.

1835 *Eye Street, Northwest.*

ENDOCRINOLOGY.*

C. H. MAXWELL, M. D., Morgantown, W. Va.

The Ayurveda of India, since 1800 B. C., contains reference to organotherapy, and such therapy of disease is largely described and advocated by Hippocrates, Celsus, Pliny, Aristotle, Paracelsus, Galen and many others. Some of these writers show some knowledge of the structures and functions of the glands involved; and the extent of their use may be deduced by the statement of Biedl that, in 1765, the apothecary shops of Innsbruck stocked 152 products of animal origin.

Theophile de Bordeu, in 1775, was first to clearly formulate a general theory, largely speculative to be sure, but very similar to our present most widely accepted understanding of this subject. He stated very clearly that each organ serves as the laboratory of specific substance which enters the blood, and there, permeating the body, is useful and necessary thereto to maintain its integrity.

Legallois, in 1801, believed that the blood underwent changes resultant of acquiring substances from the various organs through which it permeates; and Berthold, in 1849, experimentally demonstrated the production of substances that exerted profound effects on the animals in the internal secreting tissues.

In 1855, Claude Bernard, in his work on Glycogen, designated these as *inner secretions*, and the word endocrine (from the Greek endo, meaning within, and krino, I separate out) is the widely presently used designation and the one which I use in my title for these substances. Other words of similar Greek derivation—hormone, chalones, autocoids, etc.—have been suggested, but perhaps only the usual designation of the Germans might be preferred for universal use, *incretion.*

We have rapidly outlined the precursors in this subject of endocrinology but, with the full knowledge of it all, there can be no hesitation in dating the beginning of *endocrinology* from the now world famous lecture of Brown-

*Read before the Monongalia County, W. Va., Medical Society.

Sequard, on June 1, 1889, whose announcement of the startling therapeutic activity of the testicular endocrines excited the wide international attention and further expermimentation which his preceding years of exhaustive study and the demonstration of endocrines has not before received.

The work of Brown-Sequard, his position as Professor at the College of France, the highest grade scientific institution in the world, and the very brilliant group of his collaborators, disciples and successors caused the world wide rapid interest and development of this subject. Brown-Sequard and d'Arsonval, in 1891, expressed very accurately our present-day theory of endocrines, as follows: "We admit that each tissue and, more generally, each cell of the organism secretes on its own account certain products, or special ferments—which through this medium influence all other cells of the body, a definite solidarity being thus established among all the cells through a mechanism other than the nervous system. All the tissues (glands or other organs) have thus special internal secretion and so give to the blood something more than the waste products of metabolism. The internal secretions, whether by direct favorable influence or whether through the hindrances of deleterious processes, seem to be of great utility in maintaining the organism in its normal state."

It must be recalled here that, in 1855, Addison, by clinical and pathological studies, had described the disease resulting from the destruction of the suprarenals.

Today we know quite well the endocrines of the pituitary, thyroid, parathyroid, adrenal and gonad glands; we know something about the endocrines of the prostate, insular part of the pancreas, duodenum, spleen, kidney, liver, mammary, thymus and pineal glands; and are daily learning more of their functions and reacting influences on the human organism—growth, promotion or retardation, pressor effects, metabolistic influences, sex reactions, etc. We find, also, and are using the special sympathetic effects, as indicated in our therapy of symptoms: epinephrine to raise blood pressure, pituitrin to provoke contraction of smooth fibered muscles, etc.

Recently the door is opening for commencement of comprehension of the close interlocking related interactions supplemental and oppositive stimuli of various endocrines; and, in far out-reaching action, to glimmer the direct endocrine influences on the vegetative nervous system of man. This vista is of tremendous import in human relations, as will be realized as we recall our present power to isolate exactly or synchronize many of these powerful endocrines, which directly influence growth, conception, etc., but. through their action on the vegetative nervous system, reach to the roots of control of human activity, control of well being and possible and inevitable death.

The limits of our evening will not permit our expansion of this concept and consequent theme.

Our study of endocrine function has taught us their independent, individual, so-called homo-stimulation effect; for example, we find symptoms of hypothyroidism due to the lack of sufficient activity of the patient's thyroid gland; and the use of thyroid endocrine immediately supplements the inefficient existing glandular supply and corrects all symptoms; or, further, we find that the injection of this endocrine into a person normally supplied induces symptoms that we have learned to be due to a too great activity of the individual thyroid gland; such action we designate as "*hemo-stimulation*," and in this action we have the so-called law of Hallion—"The extract of an organ administered in suitable amount has an elective stimulating action on the functional activity of the same organ in the patient to whom it is administered." The basic truth of this law is now well accepted, but the fullness of its applicability is not yet completely demonstrated.

At the beginning of endocrine therapy, they were secured and administered as whole gland extracts; subsequently, the extract was purified to remove more or less of non-utilizable matter, and constant progress has now given us in pure chemical, sometimes synthetizable form, the real active endocrine, even in crystalline form and unvariable chemical molecule—thyrotoxine, synthalin, etc.

The endocrine is apparently a substance with catalytic function, but should not be considered as an enzyme.

Clinical study has shown us an ever-widening series of pathological conditions quite directly resultant and often prevented by, or cured by, the corresponding specific endocrine. Of these, the best known are pathological states due to over or under activity of the thyroid gland, of the pituitary, etc.

Some cases of this kind are shown here to-

XUM

night—hypo- and hyper-thyroid, hypo- and hyper-pituitary, Mongolian idiot, hemophilia, diabetes.

There has been long dispute that much or all of the therapeutic activity of endocrines was destroyed by digestive processes; but this now is considered as of importance in only a few endocrines, such as insulin, and even in this the pure synthetized product is found to act as well when given per os as when hypodermically injected.

Much of the criticism and possible failure of early endocrine therapy was due to the lack of scientific control of the real activity of the products used in medicine. In recent years there has been close control of activity. Only proven products should be used, and they are then found quite effective for their claimed efficiency and action.

The close dosage and minute control of efficient action to the point desired when using pituitrin is beautifully appreciated by every obstetrician using it, and the same can be said by those expert in the use of epinephrine, insulin, etc.

We have learned the interlocking and mutually adjuvant actions of endocrines, viz., thyroid and pituitrin replacement values in general stimulations and on their reciprocal activities.

And we are commencing to observe the very positive action of injected endocrine to build up, even restore by new growth its corresponding defective gland. The hypertrophy of the pituitary gland in its effort to supplement by its activity a removed thyroid is well known to surgeons in that field, and experimental work has demonstrated conclusively that superfeeding of thyroid glands provokes rapid and marked hypertrophy of the adrenals. Herring, in his experiments in such feeding, shows an increase of 56 per cent in the weight of such supra-renal glands.

The inter-relation of the thyroid and gonad activities are so well known that, to a large extent, the thyroid therapy is very useful in cases or removed or inactive ovaries.

The well established deficiency of thyroid activity in advancing age has shown us its counter effect in causing senile impotence; and to such a degree is this realized in clinical practice that the use of thyroid extract for short periods every month as preventive of the threatened loss of sexual activity is advocated (particularly for intellectuals) and its value in retardation of the precursing symptoms of advancing years (gray hair, baldness, lessening vigor, etc.) is well recognized by our foremost clinicians.

There is an increasing belief that many of our rebellious skin diseases are to be controlled by correction of the corresponding endocrine deficiency.

At the present state of our knowledge of endocrine influence of the vegetative nervous system of man, we are able to make the two divisions, A—Acceleratory, and B—Retarding.

In A, catabolic-dissimilatory:
- (a) Thyroid
- (b) Hypophysis (posterior lobe)
- (c) Chromaffin tissue (supra-renal medulla)
- (d) Sex glands.

In B, anabolic-assimilatory:
- (a) Parathyroid
- (b) Hypophysis (anterior lobe)
- (c) Adrenal cortex
- (d) Interstitial glands
- (e) Thymus
- (f) Pineal
- (g) Insular part of pancreas

In general, B group are antithetic to those of Group A, but in some of them this antithesis is not certain.

Our time will not permit details of all of the endocrines but restricts us to consideration of a few that must serve as illustrative types.

Perhaps the best known of all endocrines is that of the thyroid gland of which the active principle is a pure chemical, crystalline substance—*thyroxin.*

The thyroid is of absolute necessity for normal development and growth of the body; its atrophy results in cretinism, where the failure of physical and mental growth is manifest, growth fails almost entirely, ossification fails, mentality fails, everything in line of development seems arrested. Thyroid supply corrects these failures; thyroid starvation causes or reproduces them.

An excessive supply of the active principle, as in hyperthroidism produces, in sequence and importance:

1. Tachycardia
2. Great depression in blood pressure
3. Increase of basal metabolism
4. Increase of protein metabolism
5. Decrease of elimination of solids
6. Diminution of assimilation of carbohydrates and in extremis spontaneous glycosuria
7. Sweats
8. Mononucleosis
9. Tremor
10. Diarrhea
11. Psychic agitation

A particular combination of above with exophthalmia is the syndrome well known to us as exophthalmic goitre (Graves' disease).

Advanced knowledge of endocrines has perfected such a variety and exactitude of clinical tests that the deficiencies or surplus of such can be accurately measured and treated by suitably graded dosage. Such testing has enabled the clinician to determine various degrees and types of disease according to the variable of deficiency or surplus endocrine, as, for example, in case of the thyroid we have distinctive types of hypo- and hyper-thyroidism, according to their symptoms as follows:

HYPER-THYROIDISM

Increased basal metabolism
Increased nitrogen metabolism
Increased carbohydrate metabolism
Diminished carbohydrate tolerance
Delicate soft moist skin
Tendency to sweating
Fine lustrous hair
Rapid heart and pulse
Palpitation
Tremor
Emotional instability and mental alertness
Asthenia and fatigue
Lymphocytosis (eye signs)
Long slender bones
Long slender fingers
Teeth, pearly white, well formed

HYPO-THYROIDISM

Reduced basal metabolism
Increased carbohydrate tolerance
Lowered temperature
Shortened stature
Irregular development of epiphyses of long bones
Short stubby fingers
Slow heart and pulse
Thickened, infiltrated, dry rough skin
Loss, or scanty, brittle dry hair
Mental dullness
Slow movements
Thinning outer third of eye-brow
Thickened mucosa of the mouth and thick enlarged tongue
Teeth, irregular, poor and delayed dentition

Early detection of these symptoms permits, by appropriate therapy, their correction or cure, and in many of them prevention.

AN ATYPICAL CASE OF TYPHOID FEVER.

ALLEN H. MOORE, M. D., Doylestown, Pa.

Typhoid fever is the most common continued fever and is widely distributed throughout all the countries of the world. In spite of marked advances in sanitary engineering and preventive hygiene, this dreaded disease still stalks abroad with its fearful toll of existing morbidity. Epidemics are not nearly so common as they were prior to the World War but the disease is still too prevalent and is endemic in some of the remote rural sections of the United States.

Typhoid fever is pre-eminently a disease of youth and early adult life. Infants under the age of two years are relatively immune. Some authorities state that the disease is quite exceptional after the age of forty. This has certainly not been my experience. Tabulated records of the Surgeon-General's Office are apt to direct attention to a number of cases of the Nation's youth but they do not publish a record of the number of isolated cases of typhoid in adults past forty in certain rural sections.

Typhoid fever may be so erratic in onset and progress that identification from the symptom complex alone is very difficult, often impossible. No symptom or sign is necessarily present and no symptom or combination of symptoms is impossible. A most searching investigation may fail to reveal a local infection, a complication, or any other cause other than the typhoid septicemia itself. Conner asserts that chills in many of these cases that are obscure are due to a latent Thrombophlebitis.

The importance of blood cultures will be realized when it is remembered that a positive blood culture is the only piece of evidence which stands alone incontrovertible. The Widal reaction is open to occasional sources of error even when carefully controlled. The time to take a blood culture is when the patient suspected of being infected with typhoid or para-typhoid A or para-typhoid B is first seen. The chance for a successful blood culture in typhoid fever diminishes somewhat after the first week and diminishes rapidly after the second week. A positive agglutination reaction can be obtained in about 90 per cent of all cases of typhoid fever at some period of the disease. It is a late symptom, rarely appearing before the eighth day, and is, therefore, of comparatively little assistance in making a diagnosis in the first week.

Typhoid fever may simulate many diseases and where the symptomatic trend is not typical the diagnosis is often most difficult if not impossible. In the differentiation of the disease, all of the acute febrile diseases must be passed in review during the first week or ten days. Those that must of necessity be ruled out are, scarlet fever, variola, measles, influenza, pneumonia, septicemias and local infec-

tions by the streptococcus, staphylococcus, gonococcus, colon bacilli and other organisms, appendicitis, acute enteritis, para-typhoid fever A and para-typhoid fever B, malarial fever, typhus fever, relapsing fever, cerebrospinal fever, tuberculous meningitis, trichiniasis, malignant endocarditis and syphilis. There are few infections that necessitate such an array of bodily infections for consideration as does typhoid fever.

The intermittent types of malarial fever bear no relation to typhoid fever. The onset of the remittent type and the estivo-autumnal types, however, may closely resemble the onset of typhoid fever. In very rare cases the two infections may be concurrent and produce a confused clinical picture. Quinin has practically no effect upon the course of typhoid fever. It promptly arrests the fever of malaria. There is no such clinical entity as typhomalarial fever as is so often erroneously assigned as a diagnosis.

I wish to present a case of atypical typhoid fever which gave no actual clinical clue as to its identity but which in many respects closely resembled an infection by the malarial plasmodium.

Case Report

A white female adult, age 21 years, a recent student in a Southern institution, began May 22, 1932, with a feeling of lassitude and toxicity. The following day the patient complained of a chilly sensation but she did not actually have a chill. On May 24th the chilliness continued and she began repeated vomiting. There was no temperature until this time. I saw the patient on May 25th, the fourth day after the onset of the infection. She appeared extremely ill. She was pale, toxic, nervous, chilly, and complained bitterly of a headache which had not responded to ordinary sedation. The temperature was subnormal. The vomiting continued and gastric lavage failed to relieve it. At 5:30 P. M. there was an initial chill of forty-five minutes' duration, followed by profuse sweating. The following day there was a second chill lasting sixty minutes, followed by a severe vomiting spell and more profuse sweating. The temperature at the height of this second chill was 104. This chill occurred at 7 A. M. At 12 o'clock noon the temperature was normal. The profuse sweating continued throughout the entire day. At 5 P. M. there was another chill lasting sixty minutes, followed by sweating. The temperature at 9 P. M. was 105 1/5. The following morning the temperature was normal. At 6 P. M. another chill came on, followed with the usual profuse sweating and with a return to a normal temperature. On the morning of May 29th, the temperature was subnormal (97) and there was no rise, above normal, in the temperature throughout the day. The sweating stopped immediately and did not return, nor were there any more chills. There was a marked improvement in the patient's condition both mentally and physically. On May 30th the temperature had not gone beyond the normal excursion and the general physical improvement continued rapidly.

The patient was very weak, anemic, nervous, and had no appetite. Her toxicity had entirely disappeared. She had lost several pounds in weight and it was quite evident that this patient had played immediate host to a sudden, severe and an unknown bacterial invasion.

Physical Findings: Repeated physical examinations failed to show anything of real importance in thrusting any light on the causative factor. The heart was negative. The pulse rate during the first several days of the attack was ranging between 120 and 130. The spleen was not palpable. The abdomen was soft and there was an entire lack of tympanites. The blood pressure was 110 systolic—78 diastolic. The knee jerks were much exaggerated. There was no evidence of rash of any sort.

Laboratory Findings: Urine: amber; turbid; Sp. Gr. 1.015; slightly acid; no sugar. Very slight trace of albumin; no indican; no acetone; no acetoacetic acid; occasional leukocyte (2 per field); erythrocytes 4 per field; no casts; no cylindroids; occasional vaginal epithelial cells; no crystals.

Blood: Erythrocytes 4,120,000; leukocytes 9,100; hemoglobin 65 per cent; polymorphonuclears 81 per cent; small monocytes 7 per cent; large monocytes 11 per cent; eosinophiles 1 per cent.

Malarial Plasmodium: Repeated smears were negative.

Widal Reaction: Negative for typhoid fever; suspicious for para-typhoid fever B. Bacillus melitensis negative; para-typhoid A negative.

Blood Culture taken on May 31, 1932, was negative.

The water supply for the home of the patient was examined and was found to be entirely potable.

Urine Typhoid Culture: Positive for typhoid bacilli..

Feces Typhoid Culture: Positive for typhoid bacilli.

The patient progressed so rapidly that within a week she was out of bed despite warnings as to the needed continued rest. There has been a rather prolonged return to normal but none the less progressive. Further laboratory examinations of the feces and urine were negative as to the presence of the typhoid bacilli.

COMMENT: One cannot but be impressed with the similarity of this case to a possible infection by the malarial plasmodium. The onset, the chills, the temperature curve, the profuse sweats and the profound toxicity certainly pointed to a malarial infection. The student residence of the patient in the South was seriously considered when making the tentative diagnosis. It is to be remembered that the bacillus typhosus was not recovered from the blood culture nor was there a positive agglutination reaction for typhoid. It was not until the positive cultures for bacillus typhoid in the urine and feces that a positive diagnosis was made.

This case demonstrates the real necessity for checking up on urine and feces for typhoid in all undetermined febrile conditions that are continued.

106 *East State Street.*

Correspondence

Fee for Treating Cases of Rabies.

TO THE EDITOR:

A good many years ago, I had a patient bitten by a rabid dog. The people were in moderate circumstances and, as the law provided payment for damage done by dogs, to be paid out of the dog tax, I presented the bill to the County Board of Supervisors that they might pay it for the patient. They said that the law provided for the payment for domestic animals bitten by rabid dogs but that it did not provide for the treatment of people so bitten

To save people the expense of treatment for rabies caused by dog bites, I got State Senator, Mr. W. H. Jeffress, to get through Legislature an amendment to the law so as to pay for the treatment of rabies out of the dog tax fund. The law now provides payment for treatment out of the dog tax fund, not to exceed $100 in each case.

Recently, Dr. Winn, of Clarksville, Dr. Varn, of South Hill, and I had patients bitten by rabid dogs. The Board paid Dr. Winn $30 for vaccine and the treatments in his case and he accepted it. Dr. Varn and I put in bills for $65 per case for furnishing vaccine and treatment, the vaccine costing $15. The Board likewise sent us checks for $30 for each case but we refused to accept the checks and called a meeting of the Mecklenburg County Medical Society that the members might go before the Board of Supervisors. Practically every member of our Society was present and, after some discussion, the doctors agreed that under the depressed conditions we should accept $50 per case for furnishing and giving the vaccine. Dr. Varn and I were sent checks for this amount and Dr. Winn an additional check of $20 for his case.

W. W. WILKINSON, M. D.

La Crosse, Va.
October 18, 1932.

Dr. Wilkinson, in a letter accompanying the above statement, says that the fee varies in different counties. He draws the inference that the results obtained show how important it is for the doctors in the various counties to be organized to meet such emergencies.

Woman's Auxiliary, to the Medical Society of Va.

PRESIDENT—*Mrs. J. Allison Hodges,* 5511 Cary Street Road, Richmond.
PRESIDENT-ELECT—*Mrs. William L. Harris,* 1112 Matoaka Street, Norfolk.
SECRETARY—*Mrs. James K. Hall,* 3011 Seminary Avenue, Richmond.
TREASURER—*Mrs. Reuben F. Simms,* 2034 Park Avenue, Richmond.

Cooperation.

When you receive this number of the "MONTHLY," the annual meeting of the Auxiliary will have taken place and a new page written in the history of our organization. I hope there will be many excellent achievements recorded. This is the year for the election of new officers. I regret this letter has to be in the hands of the printer by October 15th, so I

cannot give you their names, but I bespeak for them your cordial cooperation.

No matter how efficient and faithful your officers or how excellent your program, the *success* of the Auxiliary depends upon the work and support of the individual members.

I will offer a few suggestions:

First—Attend the meetings regularly. If you cannot write a paper or make a speech, be an appreciative *listener*. Your presence will encourage the President.

Second—If possible accept cheerfully the work assigned you and always be willing to do your part.

Third—Answer letters *promptly*. Often a post card is all that is necessary and should be written at once. Nothing delays the work or is more annoying to a busy officer than to have to wait for days for a reply.

Fourth—Make *constructive*, not destructive, criticisms—the former are always welcome.

"A good thing to remember and a better thing to do—
Is to belong to the constructive gang and not the wrecking crew."

The President-Elect, Mrs. W. P. McDowell, of Norfolk, has been forced to resign on account of continued illness. Her resignation was accepted with sincere regret as she has proved a most efficient officer and has been deeply interested in the work of the Auxiliary. We pray for her a speedy recovery.

We feel we are, however, most fortunate in having one of our vice-presidents, Mrs. William Lett Harris, consent to take this office. Mrs. Harris made such an excellent record as president of the Norfolk County Auxiliary that we are sure, under her able leadership, the State Auxiliary will grow in numbers and usefulness and we must pledge her our cordial support.

The December MONTHLY will have a report of the Convention.

MARY GRAY HODGES,
President.

NOTES FROM MRS. W. J. FREEMAN, PRESIDENT OF THE AUXILIARY TO THE A. M. A.

Mrs. Freeman states: "I had the opportunity of talking with Dr. Bauer, head of the Education Bureau at the Americal Medical Association headquarters. I asked him what was the particular point he wished stressed, and he replied, '*Periodic* Health Examination.' Our Pennsylvania Auxiliary has for a number of years had a special standing committee on this subject, and an admirable leaflet issued by Mrs. John H. Page, chairman of this committee, has been copied in state journals all over the country, and will be found in Part I of the new state Handbook. The Periodic Health Examination ties in so perfectly with anti-tuberculosis and pre-school work, in which so many of our Auxiliaries are interested, that I have no doubt that you will be glad to cooperate with Dr. Bauer."

"A letter from Mrs. Wells, of Florida, contains the following paragraph: Dr. Cramp is the director of the Bureau of Investigation of the A. M. A. and has some delightful lectures on 'Patent Medicines' and 'Cosmetics.' His services are free, and possibly some other Auxiliaries may be glad to secure him on his way to or from Florida. Mrs. Wells writes: 'You will be interested to know that I have obtained Dr. Cramp for a week's tour of Florida some time in March, the dates contingent on the convention of the Federation of Woman's Clubs. I am so glad to have him speak to them.' A fine piece of public relations work."

SLOGAN FOR THIS YEAR—"KNOW YOUR AUXILIARY"

An excellent "Handbook" for use of officers has just been published. We are indebted to Mrs. McGlothlan for this helpful guide. It can be ordered directly through the chairman of Printing, Mrs. J. Newton Hunsberger, 514 West Main Street, Norristown, Pa. Price, 60 cents.

NATIONAL BOARD MEETING

The regular meeting of the National Board will be held at Hotel Pearson, Chicago, Saturday, November 19th, at 10:00 o'clock sharp.

Auxiliary to Norfolk County Medical Society.

The first Executive Board meeting of the Woman's Auxiliary to the Norfolk County Medical Society was held in the Medical Society rooms September 23rd. Plans were made for the winter's work, and committees appointed.

The regular Auxiliary meeting was held October 7th, with a large and enthusiastic attendance. The following members were appointed delegates to the State meeting in Richmond: Mrs. Chas. A. Saunders, Mrs. M. N. King, Mrs. C. C. Smith, and Mrs. N. G. Wil-

son. The Auxiliary sponsored a drive to raise funds for the Victory Memorial Tuberculosis Hospital, to be built near Norfolk. After the business meeting, Dr. Van Dusen made a very interesting talk on "The Child's Bill of Rights."

The former President of the Norfolk Auxiliary, and the President-elect of the State Auxiliary, Mrs. W. P. McDowell, is quite ill at her home in Larchmont.

The "Calendar" of the Woman's Auxiliary to the Norfolk County Medical Society for 1932-33 has just been issued. It lists approximately 150 members with a Junior Auxiliary of nearly twenty-five. The aim of the Auxiliary is stated as follows:

"The object of the Woman's Auxiliary is to be all that its name implies—an aid, a reserve force—an Auxiliary organized for the purpose of responding to any call from the Medical profession. To promote closer social contact between families of physicians. To assist in enlightening the burdens of humanity. To help preserve the health of the people. To recommend to all clubs that they place capable physicians' wives in charge of Club Health Departments in order to secure authoritative programs. To place *Hygeia* in every home, as it is the leading health magazine in the United States, and is published by the American Medical Association.

"Every physician's wife should feel it a privilege to be a member. A very important thing to remember is, you are different from all other clubs of women; most clubs are made up of women of varied interests, whose husbands come from all professions or trades. You are one profession, and must 'stick to that one trade.'"

Truth About Medicine

In addition to the articles enumerated in our letter of August 26th, the following have been accepted:

Abbott Laboratories
  Abbott's A-B-D Malt Extract with Cod Liver Oil and Viosterol 5D.
Jensen-Salsbery Laboratories, Inc.
  Undulant Fever Bacterial Vaccine.
Eli Lilly & Co.
  Gas-Gangrene Antitoxin (Combined).
  Tetanus-Gas-Gangrene Antitoxin (Combined).
  Plague Vaccine, Prophylactic, three 1 c.c. vials package.
National Drug Co.
  Tuberculin Intracutaneous for Mantoux Test.
G. D. Searle & Co.
  Tablets Chiniofon-Searle Enteric Coated ,0.25 Gm. (4 grains).
E. R. Squibb & Sons
  Typhoid Vaccine (Immunizing), one 5 c.c. vial package.
  Typhoid Vaccine (Immunizing), one 20 c.c. vial package.
Ulmer Laboratories
  Biliposol
    Ampoules Biliposol Solution, 2 c.c.

The following articles have been included with the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Non-official Remedies, 1932, p. 487):

Hollister-Stier Laboratories
  Protein Extracts Diagnostic-Hollister-Stier
McCormick & Co., Inc.
  McCormick's English Mustard.
United States Standard Products Company
  Vaccine Virus (U. S. S. P.)
The Wilber Co., Inc.
  Tablets Digitalis-Wilber.
  Tincture Digitalis-Wilber.
John Wyeth & Brother, Inc.
  Wyeth's Capsules Digitalis Leaf Defatted.

New and Non-official Remedies

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Normal Serum (From the Horse).—This product (New and Non-official Remedies, 1932, p. 357), is also marketed in bottles containing 100 c.c. The Cutter Laboratory, Berkeley, Calif.

Book Announcements

Hospitals and Child Health. Hospitals and Dispensaries. Convalescent Care. Medical Social Service. Reports of the Subcommittees: On Hospitals and Dispensaries, CLIFFORD G. GRULEE, M. D., Chairman, Convalescent Care, ADRIAN V. S. LAMBERT, M. D., Chairman Medical Social Service, IDA M. CANNON, R. N., Chairman. White House Conference on Child Health and Protection. The Century Co. New York. 1932. Octavo of 279-xvii pages. Cloth. Price, $2.50.

The Races of Man. Differentiation and Dispersal of Man. By ROBERT BENNETT BEAN, M. D., Professor of Anatomy, University of Virginia. Physical Anthropology. The University Society, Inc., New York. 1932. Octavo of 134-iv pages. Illustrated. The books, which can be obtained from the publishers only, are issued in various bindings and prices vary accordingly.

Skin Diseases and Nutrition. Including the Dematoses of Children. By ERICH URBACH, M. D., Dozent in Dermatology at the University of Vienna, etc. Authorized English Translation by FREDERICK REHM SCHMIDT, A. B., M. D., Chicago, Ill. Attending Dermatologist and Syphilologist, Alexian Brothers Hospital, Grant Hospital and United States Marine Hospital, etc. Vienna. Wilhelm Maudrich. 1932. Octavo of 242 pages. With 55 Illustrations, 8 Diagrams, and 10 Tables. Cloth. Price, $7.00, post free.

XUM

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Editorial

The Neutropenic State.*

Practitioners are impressed with the growing significance in changes in the white cell count of the blood. Surprisingly slowly has the meaning of the "low white count" and the variations from normal in differential counts been impressed upon medical thought. Red blood cells and their abnormalities in the blood picture have impressed their importance doubtless because of a number of reasons but probably primarily and chiefly because of the loss of *color*.

Leucocytosis also has occupied a prominent place. An increase of the total whites and alterations from normal of the several differential forms has become a routine and significant laboratory investigation, possessing an important clinical value. No case of appendicitis, pneumonia, or other infection, fails to receive a consideration of the leucocytosis involved.

Now, happily, growing importance is being given the signs and symptoms of conditions associated with decrease or absence of neutrophilic leucocytes in the peripheral blood. Leukopenia has long been noted as tied up with certain disease states, such as typhoid, influenza, osteomyelitis, tuberculosis, certain pneumococcic and streptococcic infections, pernicious anemia, aleukemic leukemia and other states, and certain toxic agents or agencies as benzene, the toxication of arsenicals, mesothorium, X-rays, or the gamma rays of radium.

*Doan—J. A. M. A., July 16, 1932, pages 194-202.

A Leucocyte Catechism.

How are leucocytes divided? They are divided into two groups: (1) Non-granular mononuclear cells, and (2) granular polynuclear cells.

What terms are usually employed in describing these variations and what is the average occurrence in the blood? The non-granular mononuclear cells are termed lymphocytes; there are the small and large variety—the small make up about 23 to 28 per cent of the total leucocytes and the large mononuclear about 2 to 4 per cent; the mononuclear cells originate in the lymphatic tissues of the body.

What about the "polys"? The polynuclear leucocytes are divided into three groups. The groups are determined by whether the granules in the cells stain with a basic stain (basophiles are about 1 per cent); with an acid stain (acidophiles are about 2 to 4 per cent); with a neutral stain (neutrophiles are most numerous and are about 65 to 75 per cent of the total leucocyte count). Besides these, there are the transitional cells.

Where do the polys—the polynuclear cells—originate? They originate in the bone marrow and therefore are called myeloid cells. They develop from cells in the bone marrow (myeloblasts). In due course of development, the various forms appear in the blood to perform their physiologic functions in the body.

What are the functions of these cells? This question cannot be answered in full but it is known that they possess ameboid movement

and are able to ingest foreign particles. Hence, they are commonly called phagocytes. Leucocytes increase rapidly in the occurrence of certain inflammations, injuries or infections and mobilize "at the spot which is the seat of the injury or infection, and remove the foreign organism or necrotic tissue by ingesting and digesting it." Other functions not so universally accepted are accredited to leucocytes.

The normal number of white cells varies from 6,000 to 8,000 per c.m.m. These vary, however, under normal conditions of the body.

Reference: Physiology and Biochemistry in Modern Medicine. 3rd Edition. Macleod.

Granulopenia.

After a cursory review of the recent publications on this topic, the classification proposed by Piersol and Steinfeld* appears as possessing a balanced view of the subject.

I. Primary granulopenia
   (a) Acute (Schultz)
   (b) Chronic or recurrent
II. Secondary granulopenia

This condition was first brought to the attention of medicine by Schultz in 1922. He described this entity as agranulocytosis and cited four cases. Since that time, medical publications have been dealing with this subject. In the literature, there has developed an ambiguous terminology and many different terms have been employed by authors. The most popular caption used for a time was agranulocytosis. Also the name angina agranulocytica was used. Schilling used the term malignant neutropenia. Later, Rosenthal divided agranulocytosis into malignant (fatal) and benign. Dr. Beck† suggests a classification that conveys a wider grouping of cases in this entity—malignant neutropenia. Primary may be fulminating, subacute, recurring or relapsing, and subchronic. Secondary may be fulminating, subacute, recurring or relapsing, and subchronic. Benign neutropenia with primary type may be subacute, recurring or relapsing, subchronic, and cyclic, and in secondary may be subacute, recurring or relapsing, and subchronic.

Clinical Considerations

Since Schultz in 1922 pointed out a rapidly *fatal state*, called by him angina agranulocytica, which was associated with a progressive oral infection of a severe grade, with marked weakness and prostration and with definite low white cell count to the present time, especially the past three years, the recognition of a group of important clinical entities, related to leukopenia, has been more and more frequent in practice and in clinical reports.

It may be reasonably certain that the importance of this type of cases has not received adequate attention.

A hypothesis that explains the mechanism of leukopenia by making the bone marrow the organ of generation and development of polynuclear lymphocytes may also place the clinical symptoms occurring in the mouth either as a cause or as an effect. So we may say that in primary granulopenia, the oral lesions and sepsis are secondary to the granulopenia, previously superinduced, for instance, by an allergy, some endocrine disturbance or some congenital deficiency of the bone marrow. Likewise, B. influenzae or some chemical poison has been thought to exert some depressing effect upon the bone marrow.

In secondary types, one can conceive of an infection attacking the mouth and throat and overwhelming the bone marrow function. There may be also the more or less recurrent or chronic type due to causative factors influencing silently and adversely the bone marrow and in this way stealthily bring about in patients "a low state of resistance" such as would be a factor in a recurring attack.

The Nucleotide Therapy.

A paper by Drs. Jackson, Parker, and Taylor* may serve as a reference in presenting this form of therapy. They report the results of the treatment of sixty-nine case of "agranulocytic angina" and other forms of malignant neutropenia by injections, intravenously and intramuscularly, of pentose Nucleotide K96 (Smith, Kline and French Laboratories). By this Laboratory, under the direction of the Nucleotide Committee of Harvard Medical School, the material was prepared. Of the sixty-nine cases treated, fifty-one completely recovered. Of the sixty-nine adequately treated cases, fifty-four were typical agranulocytic angina.

The plan of administration for this group was intramuscular injection of Nucleotide K96, 10 c.c. twice a day until the white blood count increased; then a continuation of intramuscular injections, 10 c.c. each, once a day

*J. A. M. A., June 20, 1931, page 2151.
†Bulletin of Stuart Circle Hospital, Richmond, Va., August, 1932.

*Studies of Diseases of the Lymphoid and Myeloid Tissues. American Journal of Medical Sciences, September, 1932.

until the white blood cell count reached normal and remained so for at least three consecutive days. A watch was maintained over the patient's white cell count by repeated examinations in order to discover earliest signs of a possible relapse.

In certain of these cases large doses were necessary to bring a response in increased white blood cells; smaller doses produced little or no effect. In the gravest cases or "desperately ill" patients, intravenous injections of 10 c.c. of Nucleotide, diluted with 100 c.c. of warm sterile saline, injected slowly each morning for four days, was practiced. In these patients an intramuscular injection of the usual dose was given in the afternoon until the white cells approached normal for three consecutive days. No improvement, states the authors, should be expected for the first few days. In fact the patient may become apparently worse. This fact is not a reason for discontinuing the treatment. Favorable clinical and hematologic improvement usually appeared on the fifth day and the response at this time was marked. "The mortality is the lowest of any published series of like size."

Department of Clinical Education
OF THE MEDICAL SOCIETY OF VIRGINIA

Tenth University Clinic.

The regular fall clinic at the University of Virginia Hospital, tenth in its post-graduate series, held on October 13th and 14th, attracted a smaller attendance than usual, a group characterized as constituting in the main the "old guard" which never quits.

The clinics comprised two days of sessions devoted to surgical, obstetrical, pediatric and orthopedic problems, with a Symposium on Headache, an evening program of open discussions and ward rounds both afternoons.

Those registered in attendance were as follows:

BROADWAY—Dr. C. E. Watson
CHARLOTTESVILLE—Dr. J. C. Coulter
Dr. Anita Lotti
CHATHAM—Dr. C. D. Bennett
CULPEPER—Dr. H. T. Chelf
Dr. D. W. Kelly
FOREST—Dr. B. A. Rice
FREDERICKSBURG—Dr. John E. Cole
Dr. Lee Cooke
Dr. J. M. Holloway
Dr. R. J. Payne
Dr. Earl R. Ware
FRONT ROYAL—Dr. O. W. Carper
Dr. D. M. Kipps
IVY DEPOT—Dr. H. L. Baptist
LOUISA—Dr. H. S. Daniel
Dr. H. W. Porter
LYNCHBURG—Dr. P. B. Echols
Dr. John Hundley, Jr.
Dr. E. G. Scott
Dr. E. L. Sutherland
MADISON MILLS—Dr. Lee Taliaferro
NEW HOPE—Dr. T. R. Rolston
NORTH GARDEN—Dr. Hunter Williams
ORANGE—Dr. Lewis Holladay
PETERSBURG—Dr. Ruth Mason-Grigg
RICHMOND—Dr. T W. Anderson
Dr. H. B. Haag
Dr. R. J. Main
Dr. E. J. Moseley, Jr.
Dr. F. J. Wampler
Dr. Pauline Williams
SCOTTSVILLE—Dr. Percy Harris
SHENANDOAH—Dr. J. J. Waff
STANARDSVILLE—Dr. E. D. Davis
STAUNTON—Dr. Wm. A. Murphy
Dr. M. J. Payne
Dr. C. W. Putney
Dr. Alex F. Robertson, Jr.
SWOOPE—Dr. W. F. Hartman
TURBEVILLE—Dr. J. A. Owen
TYE RIVER—Dr. J. F. Thaxton
UNIONVILLE—Dr. R. M. Shelton
VINTON—Dr. N. M. Robinson
WEST POINT—Dr. M. H. Harris

Prenatal and Postnatal Courses Enroll Eighty-three Physicians.

Through the seventh meeting of the second circuit of Dr. M. E. Lapham's courses in prenatal and postnatal care at Farmville, Lawrenceville, Ettrick, Petersburg and Richmond, eighty-three physicians have enrolled. Fifty-seven visitors have attended the meetings one or more times. Both the enrollment and the total number in attendance exceed the figures for the first circuit when seventy-four enrolled and twenty-nine visitors were listed. The first circuit, however, has a slightly more favorable record in respect to attendance, 76.8 per cent of those enrolled as against 74.7 per cent for the second circuit. Much the best showing has been made in the later groups in respect to the number of patients furnished for clinical demonstrations and the number of visits made by the Field Clinician to physician's offices in out-of-class hours.

The following items with previous reports

give complete information in regard to the second circuit through the seventh meeting:

Richmond—Additional enrollments: Drs. R. D. Bates, E. C. Cobb, J. T. R. Sweeney and H. H. Ware. New visitors: Drs. O. W. Cranz, H. C. Spalding, J. A. Wright and J. M. Gouldin. Total enrollments, 21. Percentage of attendance of those enrolled, 71.4.

Petersburg—Additional enrollments: Drs. P. L. Hill, F. M. Howell and H. G. Stoneham. New visitors: Drs. P. Jacobson, W. B. McIlwaine, Leta J. White and J. D. Osborne. Total enrollments, 24. Percentage of attendance of those enrolled, 69.0.

Ettrick (colored physicians)—Additional enrollment: Dr. Zenobia G. Gilpin. Total enrollments, 7. Percentage of attendance of those enrolled, 79.6.

Farmville—New visitor: Dr. W. R. Warriner. Total enrollments, 21. Percentage of attendance of those enrolled, 80.3.

Lawrenceville—New visitor: Dr. E. R. Turnbull. Total enrollments, 10. Percentage of attendance of those enrolled, 80.0.

Third Circuit Begins This Month.

Through the courtesy of its officers, Dr. George A. Wright, President, and Dr. A. M. Showalter, Secretary, and Dr. J. W. Preston, who as President of the Medical Society of Virginia instituted its educational program in 1928, the Southwestern Virginia Medical Society was given information concerning the program of post-graduate courses in prenatal and postnatal care at its regular meeting on September 21st. By action of the executive committee, the courses were approved for the territory of the Southwestern Society to begin the second week in November.

On October 3rd at the business meeting of the Roanoke Academy of Medicine, the officers, Dr. E. E. Watson, President, Dr. F. A. Farmer, Vice-President, and Dr. C. H. Peterson, Secretary, arranged for a complete discussion of the proposed class in Roanoke. The Academy unanimously voted its approval and appointed as a committee to have charge of details of organization and of conduct of the clinics Dr. George S. Hurt, Chairman, Dr. John O. Boyd, Dr. Alvah Stone, Dr. A. M. Groseclose and Dr. R. M. Wiley.

In addition to Roanoke, the third circuit comprises classes in Galax, Pulaski, Wytheville and Christiansburg. Special meetings of the physicians in each county were held at these four centers on October 10th and 11th. In each case the class was enthusiastically approved and thirty-four of thirty-five physicians present enrolled, the thirty-fifth being prevented by absence from his community on the day of the meeting.

Much attention was devoted to the double problem of completing enrollments without expensive visits on the part of the organizing staff and of providing the patients so essential for effective demonstrations. At each center committees were selected to take charge of these aspects of the courses: For the Galax group, Dr. Joseph Coates was elected chairman of the committee on clinical material and Dr. V. O. Choate chairman of the membership committee. In Wytheville, Dr. J. M. Miller and Dr. C. D. Moore constitute the membership committee and Dr. W. L. Gannaway, chairman, and Dr. C. F. Graham the committee on clinical material. At Pulaski all except two prospective members were enrolled and a committee was instructed to invite each of them. A committee of one, Dr. R. H. Woolling, was also designated to help secure patients. At Christiansburg, Dr. J. G. Davis, Jr., as chairman of the committee on membership, was authorized to select other members, and Dr. W. K. Lloyd, chairman, and Dr. J. L. Early, Dr. C. F. Manges and Dr. R. M. DeHart were appointed as the committee on clinical material.

Because of this interest and the effective preliminary organization, which profits by the difficulties and needs revealed in former classes, the third circuit of courses gives promise of being, if not the largest, certainly one of the most productive of the year.

The Fourth Circuit in Formation.

The fourth circuit of classes in prenatal and postnatal care, assigned by the Joint Committee to the Tidewater section, is tentatively scheduled to begin at the end of January with centers in Norfolk, Portsmouth, Suffolk and Franklin, with the location of the fifth class undecided. In the interest of effective organization, visits were made early in October to the officers of all local and regional societies in the territory, the Second District, the Southside Virginia, Norfolk County, Nansemond County, Southampton County and Princess Anne County.

Approval of the program was voted by the Norfolk County Society in its October business meeting, and a committee under the chairmanship of Dr. C. J. Andrews was appointed by

the President of the Society to take charge of the conduct of the class. Special meetings of other interested groups are to be held later in the fall for the completion of plans.

President Joseph D. Collins, of the Norfolk County Society, looked with favor upon the organization of a class for colored physicians if other arrangements permitted. Dr. G. Hamilton Francis, President of the National Medical Association, who after a visit to the class at Ettrick for colored physicians is enthusiastically stimulating the organization of a similar class for his colleagues in Norfolk, has undertaken to submit the application of at least a minimum enrollment. The application for this class was to be acted upon in the light of the policy adopted by the Joint Committee in respect to classes for colored physicians. As stated in the report below, the Joint Committee decided to arrange groups of Negro doctors whenever conflicts could be avoided and the local groups were favorable.

Reports to Local Societies on the Program of Prenatal and Postnatal Care.

Because the Joint Committee feels an obligation to report upon its work to members of the Medical Society of Virginia who are appriating funds for its support, letters have been addressed to all group societies and most of the local societies that are active in scientific and educational programs offering the services of a speaker to present the aims and methods of courses in prenatal and postnatal care. Members of the Joint Committee and its organizing staff and interested members of the classes themselves are making these reports to the societies. The request for the privilege of such a report is here renewed, inasmuch as the Joint Committee wishes to leave no stone unturned in accounting for the results it has achieved to those who charged it with the responsibility of its educational program.

Joint Committee Meeting.

On Friday, October 14th, six months to the day since it employed a full-time Field Clinician and embarked actively upon its work, the Joint Committee on Prenatal and Postnatal Instruction met to take stock of results and make plans for the future. All members were present: Drs. Lee E. Sutton, Jr., Chairman, and Manfred Call, representing the Medical College of Virginia; Drs. H. S. Daniel, R. A. Moore, I. C. Harrison, and J. Allison Hodges, representing the Medical Society of Virginia; and Drs. J. C. Flippin and L. T. Royster, representing the University of Virginia. Others present were Dr. W. F. Draper, State Health Commissioner, Dr. M. E. Lapham, Field Clinician, Miss Edwards, Mr. George B. Zehmer, Director of University Extension, and the Secretary, Mr. George W. Eutsler.

The Secretary's report of progress, a summary of statements in this and previous issues of the VIRGINIA MEDICAL MONTHLY, was presented in the following table of enrollments and attendance for the eleven classes already organized:

	Enrolled Members	*Average Attendance Including Visitors*	*Per Cent Attendance of Members*
FIRST CIRCUIT:			
Nelson County	8	6.5	81.3
Lynchburg	13	13.4	81.6
Lexington	14	9.6	65.7
Staunton	18	16.6	87.2
Charlottesville	21	15.9	70.5
Total	74*	62.	76.8
EASTERN SHORE:			
(Two weeks' course)	12*	12.2	72.5
SECOND CIRCUIT:			
(Through 7 meetings)			
Richmond	21	25.4	71.4
Petersburg	24	19.9	69.0
Farmville	21	21.5	80.3
Lawrenceville	10	10.4	80.0
Ettrick (for colored physicians)	7	6.8	79.6
Total	83	84.	74.7
GRAND TOTAL			
For eleven classes	169	158.2	75.6

In response to a question, it was determined from the rolls that the membership was exactly divided between local and remote members in the sense that eighty-five resided in the centers and eighty-four lived outside. A superficial examination of the rolls gave the impression that the more distant members made the best attendance record.

A summary of the opinions of the course reported by members of the classes in the first circuit and on the Eastern Shore shows that the lectures were considered "excellent" by thirty-six; "good" by fourteen; no answer, one. The vote on the clinics was: "Excellent," nine; "good," fourteen; "fair," eight, "passable," two; "poor," thirteen; no answer, four. (It should be added that in nearly every case the criticism of the clinics was based upon the inability of the class to furnish clinical material.) Forty-seven members said the course was worth their time and money, two said it was

*Excluding five physicians who enrolled and paid the fee but did not attend.

not (one explaining that he was too deaf, and the other that he lived fifty miles away), two did not answer. Forty-seven were also interested in future similar courses in other branches, against three not interested; the subjects preferred were pediatrics, seventeen, and general medicine, fifteen, with a scattering mention of others—heart, diagnosis, endocrinology and vaccines, chest, arthritis, dermatology, gastro-intestinal, immunization and preventive medicine, genito-urinary, kidney, medical economics, allergy, mental diseases, operative obstetrics, and intravenous and microscopical work.

First steps in the organization of the third circuit of classes in Roanoke, Christiansburg, Pulaski, Wytheville and Galax, and of the fourth circuit around Norfolk, were described as reported above.

The requirement that no class should be begun until it was approved by the local profession was reported as being strictly complied with. Besides visits to societies for endorsements discussions of the work were being arranged for societies not yet scheduled for classes. The Warwick County, Danville-Pittsylvania, Mid-Tidewater, Northern Neck, South Piedmont, and Fredericksburg societies had invited representatives of the Joint Committee to appear before their meetings.

Six future possible circuits where classes should be organized if they are desired and if this opportunity is to be carried to all parts of the State were indicated as Danville and the Southside, Clinch Valley and the far southwest, the Peninsula, the Northern Valley, Fredericksburg and the Northern Neck, and the territory between Orange and Alexandria.

The chief items of the financial report were: annual budget, $12,500; expenses for six months, $5,656.99; receipts from the Commonwealth Fund, $5,000; from the Medical Society of Virginia, $1,250; from enrollment fees at $5 per member, $750.

Dr. Lapham gave a concise and illuminating report of methods, experiences and results in his work of instruction. In the didactic lectures during the first half of each meeting, he had demonstrated tests for the early diagnosis of pregnancy, pelvimetry, the interpretation of pelvic findings and other obstetrical procedures, and he had continually impressed the necessity for careful routine work, precepts to which emphasis was given by some admissions of members that hurried and unscientific technique had been employed. To the question usually raised of the inability of patients to pay for adequate prenatal care, he had attempted to show ways by which such practice could be carried on to the profit and prestige of the physician. Increase of discussions was noted as the courses progressed and classes and instructor became better acquainted. Always information in regard to further reading was given, but a need is shown for access to scientific libraries, perhaps those of the two medical colleges if machinery can be provided. Mimeographed copies of all the lectures, printed prenatal history cards which had met with favor and been put to general use, and a sheet of instructions to women, were distributed to the classes. Clinical demonstrations had been helpful and satisfactory where patients were available, although criticism, for which there is a standing invitation, had emphasized the lack of clinical material. In most cases the groups admitted their laxity in suggesting cases and accepted the responsibility for effectiveness or ineffectiveness in this phase of the work. Personal instructions and consultations, when requested and when not supplanting another consultant, were considered a valuable part of the course. The total number of such consultations at the time of the report was seventy-seven. The number of patients in the clinics was eighty-nine. In addition, there had been ward rounds, repeated diagnostic tests, practice demonstrations by members during the classes and several deliveries and operations.

The Joint Committee voted to approve and spread upon the minutes the reports submitted and went on record unanimously as considering that the results so far achieved amply justify the continuance of this program. It was resolved that, in view of the fact that a considerable saving will be made in the anticipated expenses and that collection of fees will exceed expectations, the sums so obtained, added to the tentative allotment of $5,000 by the Commonwealth Fund for the second year, would be adequate to continue the program, provided the House of Delegates supports it again with the same appropriation of $2,500. The organizational staff was enjoined to reduce expenses as much as possible without disadvantage to the work. The Executive Committee, consisting of the Chairman and Drs.

Harrison and Flippin, was authorized to prepare a report and a proposal for the House of Delegates.

The Committee ruled that in the case of applications for classes on the part of Negro physicians, the groups should be formed whenever there was no conflict and the local societies approved.

GEO. W. EUTSLER,
Secretary.

Proceedings of Societies

Alleghany-Bath County Medical Society.

On September 29, 1932, the regular bimonthly meeting of this Society was held at the Recreational Hall, Chesapeake & Ohio Hospital, Clifton Forge, Va., Dr. I. T. Hornbarger, President, of Hot Springs, presiding.

The following scientific program was delivered:

Surgery of Cranial Nerves—Dr. C. C. Coleman, Richmond.
Surgical Treatment of Pulmonary Tuberculosis—Dr. Hugh H. Trout, Roanoke.
New Ideas in Regard to Convulsions—Dr. Beverley R. Tucker, Richmond.
Infant Feeding—Dr. J. B. Stone, Richmond.
DINNER 1:00 P. M.
The Problem of Chronic Arthritis—Dr. Russell L. Haden, Cleveland, Ohio.
Transplantation of Ureters for Exstrophy and Carcinoma of Bladder—Dr. J. M. Emmett, Clifton Forge.
Demonstration of Cases—Dr. G. S. Hartley, Clifton Forge.

Numbered among the invited guests were Dr. J. Frank Dinnen, Cleveland, Ohio, Supervising Surgeon, the Chesapeake & Ohio Railway and Chief Surgeon the Erie Railway, and Dr. W. T. Oppenhimer, Richmond, Va., Chief Surgeon, the Chesapeake & Ohio Railway.

The meeting was well attended by the active members of the Society, as well as by an excellent representation of the profession from the surrounding counties of this section of Virginia and West Virginia numbering about seventy.

Applications for membership were received from Dr. Harry G. Hudnall, Covington, Va., and Dr. Maurice M. Fliess, Clifton Forge, Va.

R. P. HAWKINS, JR., *Secretary.*

James City-New Kent County Medical Society.

A meeting of this society was held on October 6th at Toppings Tourist Camp. There were nine members present. Two new members were received into the society—L. V. Henderson, D. D. S., and Henry E. Davis, M. D. Dr. A. M. Sneed was elected delegate and Dr. J. R. Tucker alternate to the Medical Society of Virginia.

A motion was made and approved that each member be assessed one dollar every two months to take care of incidental expenses of the Society.

There was considerable discussion of the Mother's Bill of Rights, and the Society went on record as approving the amendment to this Bill.

Dr. A. M. Sneed, Toano, is president of this organization, and Dr. J. R. Tucker, Williamsburg, secretary.

The Loudoun County Medical Society,

At its annual meeting held recently, elected the following officers for the ensuing year: President, Dr. H. P. Gibson, Leesburg; vice-presidents, Drs. W. D. Sydnor, Hamilton, and George H. Musgrave, Leesburg; and secretary-treasurer, Dr. W. O. Bailey (re-elected), Leesburg. Drs. W. O. Bailey and M. B. Hiden were also elected at this time as delegate and alternate, respectively, to represent this Society at the Richmond meeting of the State Society.

The Northampton County Medical Society

Held its regular quarterly meeting at the Eastville Inn, Eastville, Va., October 13th, at which time, Dr. F. S. Johns, invited guest from Richmond, presented an interesting paper and several case reports on "Ectopic Pregnancy".

Dr. Griffin W. Holland was elected to succeed himself as a representative from that Society to the Board of Trustees of the Northampton-Accomack Memorial Hospital at Nassawadox, Va., for a period of four years.

W. C. HENDERSON, *Secretary.*

Patrick-Henry Medical Society.

At a meeting of this Society, October 6th, the following officers were elected for the ensuing year: President, Dr. C. W. Thomas,

Martinsville; vice-president, Dr. W. N. Thompson, Stuart; and secretary-treasurer, Dr. F. B. Teague, Martinsville. Delegates appointed to the Richmond meeting of the State Society are Drs. J. T. Shelburne and D. H. Mason, and alternates Drs. W. C. Akers and E. M. McDaniel.

A motion was made and passed that the secretary of the Society inform the State Board of Health, through Dr. Draper, that the Society protested against making the weekly reports of contagious diseases to the State Board of Health, as is now being required.

F. B. Teague, *Secretary.*

Roanoke Academy of Medicine.

The first Fall meeting of this organization was held on October 3rd, as a dinner meeting and the annual election of officers was held at this time. The following were elected: President, Dr. F. A. Farmer; vice-presidents, Drs. E. C. Ambler and R. L. Mason; and secretary-treasurer, Dr. C. H. Peterson (re-elected). The Executive and Judiciary Committees were re-elected as follows: Executive Committee—Drs. H. B. Stone, I. E. Huff, Paul Davis, E. C. Watson, and Churchill Robertson; Judiciary Committee—Drs. J. W. Preston, H. H. Wescott, E. G. Gill, J. D. Willis, and W. L. Powell.

The next regular meeting will be held on November 7th.

The Rockingham County Medical Society,

At its regular meeting on October 10th, elected Dr. Charles E. Conrad and Dr. F. L. Byers, both of Harrisonburg, as delegate and alternate, respectively, to the annual meeting of the State Society. Dr. T. J. Williams, of the Obstetrical Department of the University of Virginia, gave an interesting talk on the care of obstetrical cases.

Officers for 1932-33 were elected at the September meeting as follows: President, Dr. Noland M. Canter (re-elected); vice-president, Dr. Howard Armstrong; secretary-treasurer, Dr. F. L. Byers. All officers are of Harrisonburg.

The Medical Association of the Valley of Virginia

Held its regular semi-annual meeting in Staunton, September 22nd, with the president, Dr. L. M. Allen, Winchester, presiding. There were sixty-one members present at the luncheon held between the morning and afternoon sessions. Dr. Louis V. Hamman, of Baltimore, the invited guest, gave a talk on "The Diagnosis of Coronary Occlusion." Other papers were given by Drs. F. L. Byers, J. M. Emmett, C. E. Conrad, L. M. Allen, Maurice Fliess, and R. P. Bell.

The following officers were elected for the ensuing year: President, Dr. H. G. Preston, Harrisonburg; vice-presidents, Drs. E. C. Stuart, Winchester, and R. P. Hawkins, Clifton Forge; treasurer, Dr. L. F. Hansbrough (re-elected), Front Royal; and secretary, Dr. Alexander F. Robertson (re-elected), Staunton.

The next meeting of this association will be held at Clifton Forge, the fourth Thursday in May, 1933.

The South Piedmont Medical Society

Plans to hold its regular semi-annual meeting in South Boston, Va., November 22nd. The program promises to be interesting as usual. Dr. J. B. Lacy, Nathalie, is president, and Dr. George A. Stover, South Boston, secretary.

News Notes

On to Richmond!

The Medical Society of Virginia is meeting in Richmond, November 1st, 2nd and 3rd, and many of those planning to attend will be on the way before this issue of the Monthly reaches them. As a last call, however, we urge you to attend, as many matters of interest will be discussed, the scientific and commercial exhibits will be unusually attractive, and there will be helpful clinics on a variety of subjects. Pack up your grip and come at once if you had not already arranged to attend. Bring the ladies of your family with you as the local ladies have arranged entertainment for them and they will want to be present at the Auxiliary meetings to know what the other doctors' wives are doing.

The Southern Medical Meeting.

The twenty-sixth annual meeting of the Southern Medical Association is to be in Birmingham, Ala., home of the Association—No-

vember 16th-18th. All doctors who are members of a county society are invited to attend. A large attendance is expected and reservations should be made in advance if possible. In addition to the regular sections, a number of affiliated associations will meet during this time. Birmingham is easily accessible by rail and likewise is the center of a number of good automobile roads. Dr. Lewis J. Moorman, Oklahoma City, Okla, is president, and Mr. C. P. Loranz, secretary manager.

News From University of Virginia, Department of Medicine.

The University opened for the current session on September 15th. The total enrollment in the Department of Medicine is 247 students.

On September 28th Dr. Russell Haden of the Cleveland Clinic spoke before the University of Virginia Medical Society on the subject of The Problem of Chronic Arthritis.

Dr. Robert V. Funsten, Assistant Professor of Orthopedic Surgery at the University of Iowa from 1919 to 1922, and for the past ten years Associate Orthopedic Surgeon at the Harper Hospital and the Children's Hospital of Michigan in Detroit, has been appointed Professor of Orthopedic Surgery in succession to Dr. Allen F. Voshell and assumed his duties on July 1st.

At the meeting of the University of Virginia Medical Society on October 10th, Dr. Vincent Archer read a paper on Actinomycosis, and Dr. C. C. Speidel showed several reels of motion pictures of Living Nerves.

Dr. Vincent Archer attended the meetings of the American Roentgen Ray Society in Detroit on September 27th-30th. He presented a paper on Actinomycosis. He served also as a member of the Committee on Awards in Scientific Exhibits.

The tenth Post-Graduate Clinic, held at the University of Virginia Hospital on October 13th and 14th, was attended by forty-five physicians.

At the meeting of the University of Virginia Medical Society on October 24th the following program was presented: Etiology and Prevention of Heart Disease, Dr. J. E. Wood, Jr.; A Routine Personality Study for Office Use, Dr. D. C. Wilson; An Analysis of the First Year of the Allergy Clinic, Dr. Oscar Swineford, Jr.

Medical College of Virginia News Notes.

An increase of more than seven hundred patients was noted in the outpatient department for the month of September as compared with the same month last year. In September there were 5,150 visits made to the various clinics while for the same month last year there were only 4,381 visits. Of the total visits made in September 51 per cent were male patients and 49 per cent female, and 42 per cent were white, 58 per cent colored. One thousand seventy-eight laboratory tests of various kinds were made in this department.

Dean Robert C. Wilson of the school of Pharmacy of the University of Georgia was a recent visitor to the college.

While in Richmond at the dedication of the Richmond Academy of Medicine, Dr. Edward H. Cary, President of the American Medical Association, made a talk to the junior and senior medical students.

Recent visitors from our alumni were Dr. Joseph T. Peters of the class of 1927, Dr. I. T. Peters of the class of 1918, and Dr. Yates S. Palmer who graduated in 1931.

The pathological museum is now housed in the main reading room of the old library space which was provided in McGuire Hall. This became vacant when the new library was opened the first of September.

At the recent meeting of the American Dental Association at Buffalo Dr. Harry Bear, dean of the school of dentistry, was re-elected secretary of the American Society of Oral Surgons and Exodontists. He was also elected trustee of the Fifth District of the American Dental Association. This district comprises the States of Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi and Florida.

Faculty and Staff Meeting.

Dr. I. A. Bigger, Chairman, announces that the regular scientific monthly meeting of the Faculty and Staff of the Medical College of

Virginia was held Thursday, October 20, 1932 at 8:15 P. M. in the auditorium of the Saint Philip Dormitory.

The program was as follows:

1. "A Case Report of Rheumatic Fever (?)." Dr. S. A. Anderson, Jr.
2. "The Morphine-Barbiturates Synergism." Dr. Harvey B. Haag assisted by Mr. W. K. Underwood and Mr. W. A. Porter.
3. "A Review of My Recent Trip to European Clinics." Dr. William B. Porter.

News Notes from the Duke University School of Medicine, School of Nursing and Duke Hospital.

On September 1st, Dr. Willis C. Campbell, Professor of Orthopedics at the University of Tennessee, gave a motion picture clinic on Joint Surgery in the amphitheatre at the Duke Hospital.

On September 26th the autumn quarter of the School of Nursing began with thirty-six students registering, and on October 3rd the autumn quarter of the School of Medicine began with fifty students registered in the first year class, fifty-nine in the second year, thirty-five in the junior and fourteen in the senior class. Several of the senior students are taking their elective work at other medical schools this quarter, for which they will receive credit here.

The regular monthly meeting of the Durham-Orange County Medical Society was held at the Duke Hospital on the evening of October 14th, at which papers were read by Dr. D. T. Smith, Associate Professor of Medicine at the Duke University School of Medicine, and Dr. E. M. Poate, who was recently appointed to the faculty as Assistant Professor of Psychiatry.

On August 15th, Dr. William S. Thayer, of The Johns Hopkins Hospital, gave a clinic on Cyanosis at the Duke Hospital.

The following appointments have been made: Mr. F. Vernon Altvater, Acting Superintendent of the Duke Hospital, and Mr. F. Ross Porter, Assistant Superintendent, in charge of admissions.

Married.

Dr. Kester St. Clair Freeman and Miss Anna Leigh Hawthorne, both of Kenbridge, Va., October 12th.

Dr. Joseph Warren Hundley and Miss Margaret Isabel McCaughan, both of Philadelphia, October 8th. Dr. Hundley was formerly of Richmond, and graduated from the Medical College of Virginia in 1927.

Members of Loudoun County Game and Fish Association.

Dr. John A. Gibson, Leesburg, Va., is a member of the board of governors of this Association and also a member of its legislation committee.

Dr. J. E. Clagett, Hamilton, Va., is a member of the committee on fur-bearing animals.

On Welfare Board.

Dr. T. K. McKee, Saltville, and Dr. R. E. Hughes, North Holston, are two of the directors of the Smyth County (Va.) Welfare Board.

Dr. Carl W. La Fratta,

Of the class of '31, Medical College of Virginia, has located at 413 North 23rd Street, Richmond, Va., for general practice. He interned at St. Vincent's Hospital, Norfolk, Va., and then practiced for a time with Dr. J. D. Hagood, at Clover, Va., before returning to Richmond.

Dr. Clifton R. Titus,

Of the class of '31, Medical College of Virginia, who recently completed an internship at Gallinger Municipal Hospital, Washington, D. C., has located at Lucketts, Va., for the practice of medicine.

Dr. Paige E. Thornhill,

Recently of Watertown, N. Y., has located in Norfolk, Va., with offices in the Wainright Building. He will be engaged in the practice of obstetrics and gynecology.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons,

At its meeting at French Lick, Ind., the middle of September, elected the following officers for the ensuing year: President, Dr. Jennings C. Litzenberg, Minneapolis; vice-presidents, Dr. P. Brooke Bland, Philadelphia, and Dr. Frederick S. Wetherell, Syracuse; secretary, Dr. Magnus A. Tate (re-elected), Cincinnati; assistant secretary, Dr. Arthur M. Mendenhall, Indianapolis; and treasurer, Dr. Lewis F. Smead (re-elected), Toledo.

It was decided to hold the next annual meeting in September, 1933, at Lucerne, Quebec.

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The mid-winter clinical meeting will be in St. Louis.

Dr. Jesse McCall,

Of the class of '31, Medical College of Virginia, has recently won honors in surgery in the National Medical Board Examinations. He was one of eleven physicians who were declared honor winners out of a total of 352. Dr. McCall is at present a house physician in the Boston City Hospital.

Dr. Beverley R. Tucker,

Richmond, Va., was elected president of the Virginia Society of the Cincinnati, at its meeting in Richmond, the middle of October.

Dr. Holcombe H. Hurt,

Who recently completed a fellowship in surgery at the Mayo Clinic, Rochester Minn., has returned to Virginia and located in Lynchburg, Va., with offices in the Allied Arts Building. He will be engaged in the practice of surgery. Dr. Hurt is an alumnus of the University of Virginia in the class of '24.

Dr. W. Arthur Porter,

Norfolk, Va., announces the removal of his offices to 501 Wainwright Building, 229 West Bute Street, that city.

Dr. J. T. Green

Announces that he is located at Pennington Gap, Route 2, Va.

Dr. O. Noel Morison,

Class of '28, University of Virginia, following a fifteen months' internship at the New York Neurological Institute, accepted a position on the medical staff of the Essex County Hospital (psychiatric) at Cedar Grove, N. J., and entered upon his duties there on October 15th. His previous training consisted of twenty-one months at the reception service of the Binghamton (N. Y.) State Hospital, a one-year fellowship at the Institute for Juvenile Research, Chicago, in which time training was received in child guidance work, criminology and psychoneuroses at the Institute, Joliet prison and Michael Reese Hospital, and three months on the psychiatric staff of the Institute for Juvenile Research.

Our American Red Cross.

The American Red Cross will hold its annual Roll Call between Armistice Day and Thanksgiving. At that time the American people will be asked to renew their memberships in this, our national relief agency. Moneys received in this way finance the truly monumental humanitarian program of the Greatest Mother, the demands upon whose bounty have never been greater in urgency and degree.

More than 15,000,000 of our citizens have been served by the American Red Cross within the past year through its various activities. At the present moment unemployment relief is being carried on in some 2,200 of its 3,600 chapters. Last spring alone 300,000 packages of garden seed, each weighing four pounds were distributed and 220,000 tons of stock feed. Utilization of local Chapters enabled the needy to receive 40,000,000 bushels of Government wheat and is now making available the 500,000 bales of Government cotton voted by Congress for relief.

Some communities have held their drives but if you have not joined for 1933, do so now. Only 50 cents of your membership fee, except Life and Patron memberships, is used for National Service. The rest stays in your Chapter.

Dr. Morton M. Pinckney,

Having completed an internship at the Massachusetts General Hospital, Boston, has returned to Richmond, Va., and is located at 828 West Franklin Street, where he is associated in practice with the Doctors Blanton. Dr. Pinckney graduated from the University of Virginia in 1930.

Dr. Deryl Hart,

Head of the Department of Surgery at Duke University, Durham, N. C., addressed the Lynchburg (Va.) Academy of Medicine, Inc., on October 3rd, his subject being the Tidal Irrigation Treatment of Empyema.

Dr. James Morley Hitzrot

Has been appointed Professor of Surgery and Attending Surgeon to the New York Polyclinic Medical School and Hospital, New York City.

Dr. and Mrs. Joseph T. N. McCastor

Are at present in Vienna, where Dr. McCastor is taking post-graduate work and Mrs. McCastor is working toward her M. D. degree. Dr. McCastor graduated from the Medical College of Virginia, Richmond, in 1927, and shortly thereafter went to New York City.

The American Society for the Control of Cancer.

At a meeting of this Society on October 8th, the Board of Directors voted that "the *Bulle-*

tin of the Society be made its official organ and that the present relationship between the Society and the *American Journal of Cancer* be discontinued."

American College of Surgeons.

As we go to press, we learn that Dr. William D. Haggard, clinical professor of surgery at Vanderbilt University, Nashville, Tenn., was named president-elect of the American College of Surgeons, meeting in St. Louis. He succeeded Dr. J. Bentley Squier, of New York City, who became president at this meeting.

Parrot Fever Warning Issued.

The U. S. Public Health Service advises all persons to avoid contact with recently shipped or acquired birds of the parrot family, as several cases of psittacosis, or parrot fever, have recently been reported in various parts of the United States.

New Zealand's School Dental Service.

New Zealand has a system of school dental clinics—begun in 1920—which are established on application when the cost of premises and certain maintenance expenses are guaranteed by responsible local organizations. The teeth of all children in the entering classes are examined, and any needed treatment is given if the parents consent. Re-examinations and necessary treatments are given at intervals of six months. At the present time about 60,000 children in 730 schools are being cared for. An important feature of the system is the employment of women nurses who have received a two-year course in dental hygiene in the Wellington training school.

Wanted—

New location by physician with twenty-three years of Hospital, General Practice and Military Service. Licensed in Virginia and West Virginia. Address "*Physician*," care the VIRGINIA MEDICAL MONTHLY, 1200 East Clay Street, Richmond, Virginia. (*Adv.*)

Hourly Nursing Service.

The Private Duty Nurses' Club, of Richmond, Va., announces the inauguration of an Hourly Nursing Service, in which its members are subject to call for service in all branches of the work that can be adequately performed in the home, at the following rates: $1.50 for the first hour or less, and 50 cents for each additional hour or fraction thereof.

The Club realizes that due to the present economic situation there is a pressing need for a service of this kind in Richmond, which has heretofore been furnished only by the I. V. N. A. The adoption of a similar movement will render a distinct service to the people who do not care for or cannot afford a full time nurse. It will also help to solve the unemployment situation among members of the Private Duty Nurses' Club.

For information, dial 3-1656. (*Adv.*)

For Sale—

Modern office equipment and instruments. Can be seen at 406 West Broad Street, Richmond, Va., or for information write No. 362, care VIRGINIA MEDICAL MONTHLY, 1200 East Clay Street, Richmond. Reason for selling—leaving State.

Obituary Record

Dr. Alfred Leftwich Gray.

With the passing of Alfred Gray the profession of the city, state and nation has lost one of its strong men. For as president of the Richmond Academy of Medicine, of the Medical Society of Virginia, and the American Roentgen Ray Society, he has led and served all three.

Born in Fluvanna County, Va., in 1873, he received his academic training and later his medical degree at the University of Virginia in 1897. Dr. Gray became associated with the University College of Medicine in 1899 and served that institution as instructor in Anatomy and Orthopedic Surgery, and later as Professor of Physiology until that school was merged with the Medical College of Virginia in 1913. He held the same chair of Physiology in the amalgamated school until 1916. That year he was made Professor of Roentgenology and Dean of the School of Medicine, which latter position he held until 1920. To enumerate all of his professional affiliations and activities would be a work of supererogation.

There is probably no man today living in this State who has contributed more liberally of his time, energy and ability to medical education and to medical organization than has Dr. Gray. In his long service as Dean of the Medical College of Virginia, his judicial temperament and spirit of fair play won the respect, admiration and affection of all who came

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in contact with him. Though he never hesitated or equivocated but boldly took his stand in any controversy, he had the happy faculty of never offending his antagonists. When Alfred Gray studied medicine, the bench lost a man who would have graced its councils. If there was one outstanding characteristic of this man other than his fairness and human sympathy, it was his thoroughness. He finished what he started! It was this infinite capacity to take pains, to complete every task in minutest detail, that made him one of the foremost figures in his chosen specialty of Roentgenology.

All this of Alfred Gray the physician, who gave unstintingly of himself to his profession, and whose profession rewarded him unstintingly in return. But what of Al Gray the man, Monk Gray as his intimates called him! Here he will be missed as keenly, as poignantly, as in his profession. His gentleness, his kindliness, his blessed whimsical sense of humor, will always remain as sad sweet memories. He has left behind him a beautiful legacy: the record of a full life spent in good work well done, the memory of a devoted husband and father, a fine upstanding gentleman deeply beloved by all who came in contact with him.

W. L. Peple

Dr. Gray died on the night of October 13th, after an illness of a year and a half. He is survived by his wife, formerly Miss Alice Lear Clark, and three sons.

Dr. Thomas Marshall Taylor,

For the past fifteen years resident surgeon at State Farm, Va., died at Blue Ridge Sanatorium, October 18th, after having been in bad health for some time. He was fifty-five years of age and graduated from the former University College of Medicine, Richmond, in 1898. After his graduation, Dr. Taylor entered the quarantine service at Newport News, and then engaged in general practice in Fluvanna and Louisa Counties. Dr. Taylor was surgeon for the Chesapeake & Ohio Railway for some years. His wife and two children survive him.

Resolutions on the Death of Mark Wallace Peyser, M. D.

Death has removed from our midst and gathered to his fathers

Mark Wallace Peyser, M. D., aged 62 years.

Born in Washington, D. C., July 8, 1870, he passed most of his life in Virginia. He graduated from the University of Virginia in 1890, at the age of twenty, and the following year served his internship at the old Retreat for the Sick Hospital, Richmond, Va. His death occurred in Richmond on July 29, 1932.

His relationship to the Richmond Academy of Medicine, and through this organization, to the medical profession of the city and state, was unique; we could hardly think of the one without visioning the other.

In the routine administration, as Secretary of this Academy for nine and-thirty years, in periods of calm and times of stress, Dr. Peyser always presented the same unchanging front; courteous, affable, considerate, just, always dignified, he inspired confidence, esteem and affection.

Meticulous in his association with his confreres, he daily exemplified the highest principles of our profession, with offence to none and satisfaction to all.

Dr. Peyser was a student—eager to keep abreast of the always advancing medical sciences—selective in the utilization of his knowledge, with an unusual cultural background

He was a humorist and a wit, happy in his friendships and loyal to his friends. With fortitude and unshaken faith he passed his latter years of disability and pain.

The Academy honors itself in honoring his memory, and placing on its records its testimonial of his worthiness as a physician and officer of this Academy, his value as a medical teacher and writer, his devotion as a husband, son and brother, and his virtues as a man of honor and unaffected simplicity. His memory will always be fragrant to those who knew him and worked with him.

"Green be the turf above thee,
Friend of my better days;
None knew thee but to love thee,
Nor named thee but to praise."

Manfred Call,
Joseph Bear,
Committee.

Dr. James Murray Ellzey,

Philadelphia, Pa., died October 21st, after a short illness, at the age of sixty. He was a native of Virginia and graduated in medicine from the Medical College of Virginia in 1896. He is one of the founders of the Chestnut Hill Hospital of Philadelphia and a consulting surgeon in that institution.

Dr. Harry Lee Beard,

Lewisburg, W. Va., died August 17th. He was sixty-two years of age and a graduate of the University of Virginia, Department of Medicine, in 1893.

Professor William August Puckner,

Secretary of the Council on Pharmacy and Chemistry of the American Medical Association, died October 1st, aged 68 years. Professor Puckner was well known to the profession of this country. He was chosen secretary of the Council on Pharmacy and Chemistry when it was established in 1906 and had served continuously since that time.